

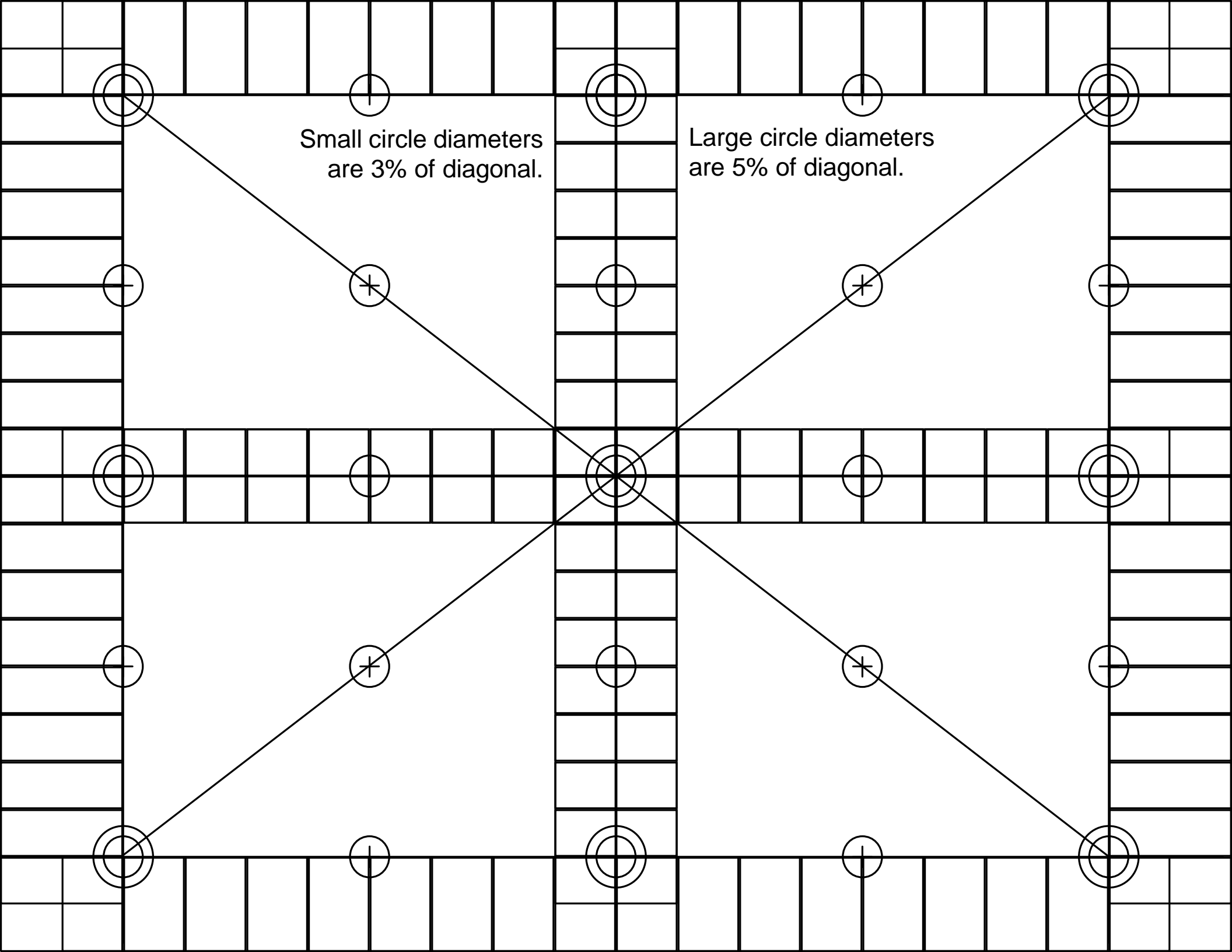


SETUP PATTERNS FPDM

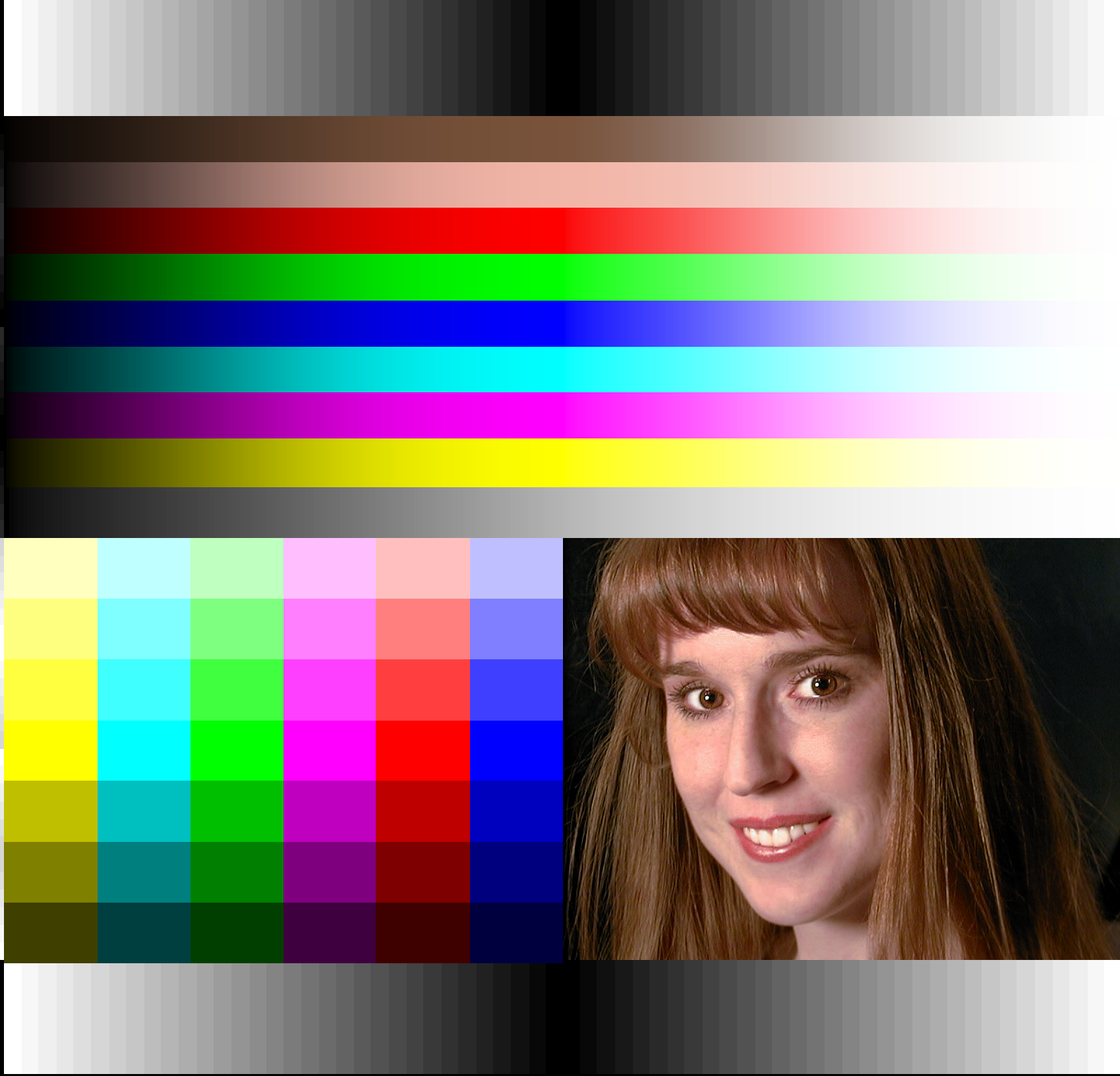
Examine the contained pictures and patterns (gray scales are 32 levels). Adjust the display settings (contrast, brightness, etc.) to obtain the most acceptable performance according to how the display is intended to be used. Unless specified otherwise, the settings established with this method shall not be changed during the course of the measurements which follow; that is, it is not permissible to optimize the display for each measurement performed. For more patterns, see individual bitmapped files.

RENDERING GRAY LEVELS AT A LOWER GRAY-SCALE RESOLUTION:

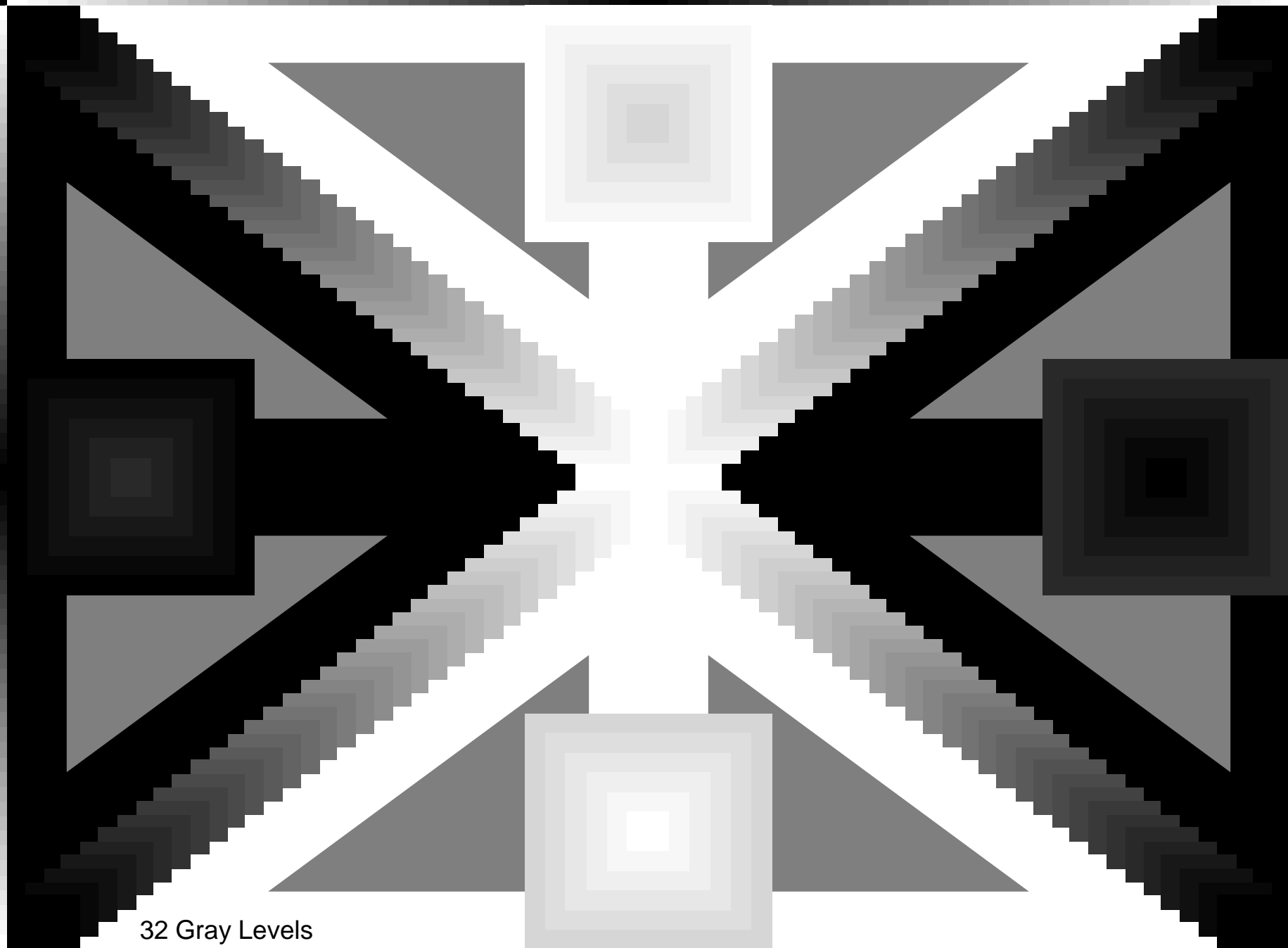
Bits in software are associated with discrete levels of electrical signals to produce various shades of gray on the screen. These bit levels are called gray levels or command levels. The relationship between the gray level (bits in software) and the gray shade is the gray scale or the electro-optical transfer function—sometimes called the “gamma” because of the historical usage of the term. The number of gray shades actually produced will not necessarily be the same as the number of gray levels depending upon the characteristics of the display used. Given n gray levels that can be employed to present gray shades on a screen, there are $w = n - 1$ gray levels above zero with gray-level 0 for black and gray-level $w = n - 1$ for white. We want to select a subset of m levels ($m < n$) that are relatively evenly spaced within this larger set of n levels. The interval between the w levels to create m levels is $\Delta V = w/(m-1)$, which may not be an integer. The m levels we select are the (integer) values given by $V_i = \text{int}[(i-1)\Delta V]$ for $i = 1, 2, \dots, m$; or $V_i = 0, \text{int}(\Delta V), \text{int}(2\Delta V), \text{int}(3\Delta V), \dots, \text{int}[(m-1)\Delta V]$, with $\text{int}[(m-1)\Delta V] = w$ for white. For example, in an 8-bit gray scale, there are $n = 256 = 28$ levels with the white level as $w = 255$. Suppose we want to select $m = 8$ gray levels that are evenly spaced. The needed interval is $\Delta V = 36.4286$, and the chosen levels are: 0, 36, 73, 109, 146, 182, 219, 255. If we wanted to select $m = 32$ levels from the 256 levels, we'd use $\Delta V = 8.2258$ to give levels: 0, 8, 16, 25, 33, 41, 49, 58, 66, 74, 82, 90, 99, 107, 115, 123, 132, 140, 148, 156, 165, 173, 181, 189, 197, 206, 214, 222, 230, 239, 247, 255.



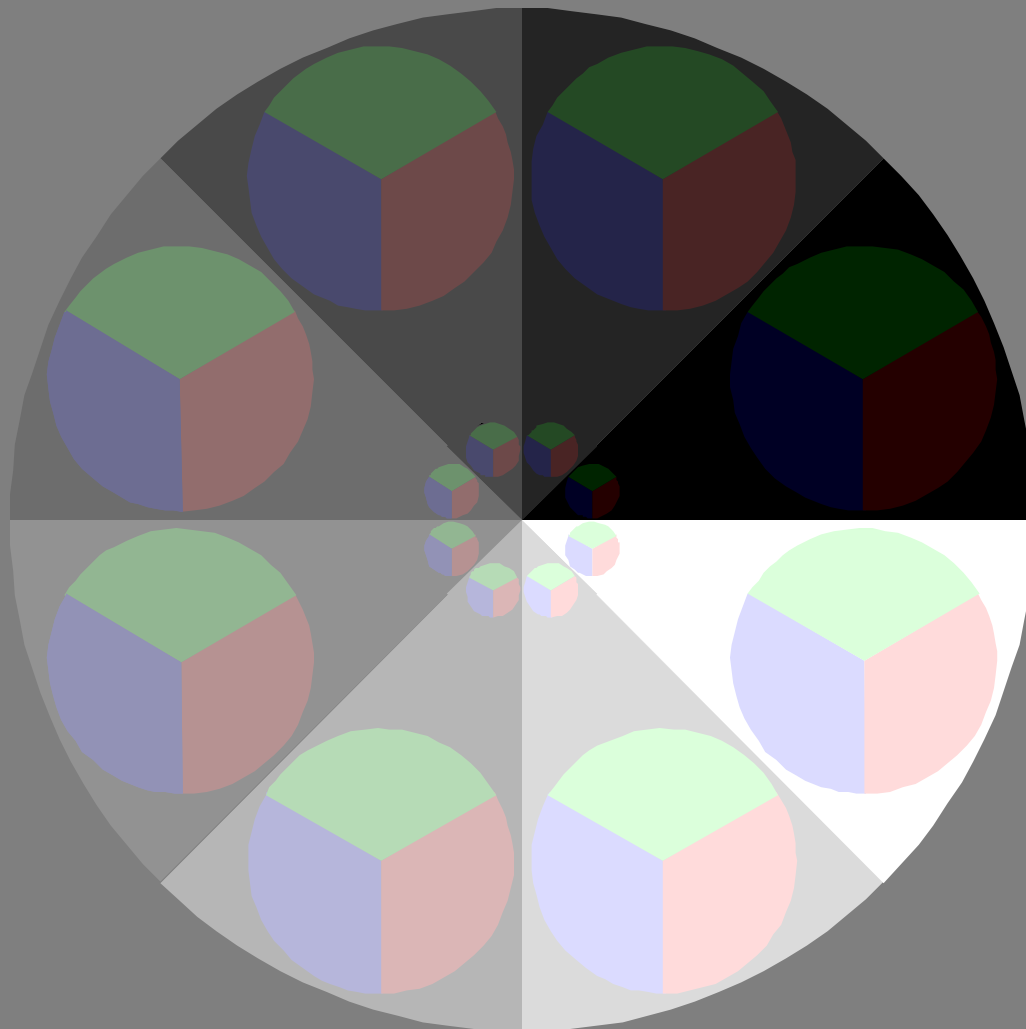
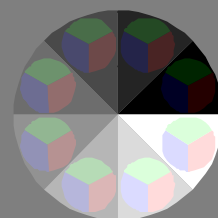
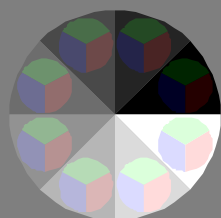
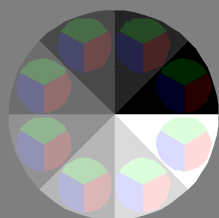
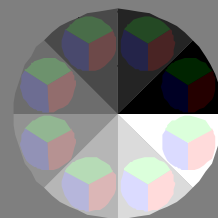
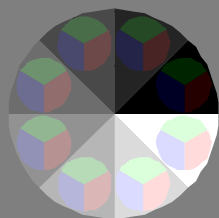
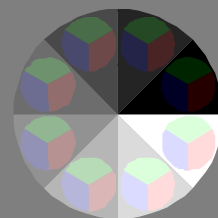
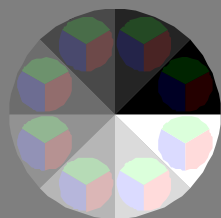
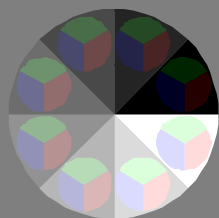


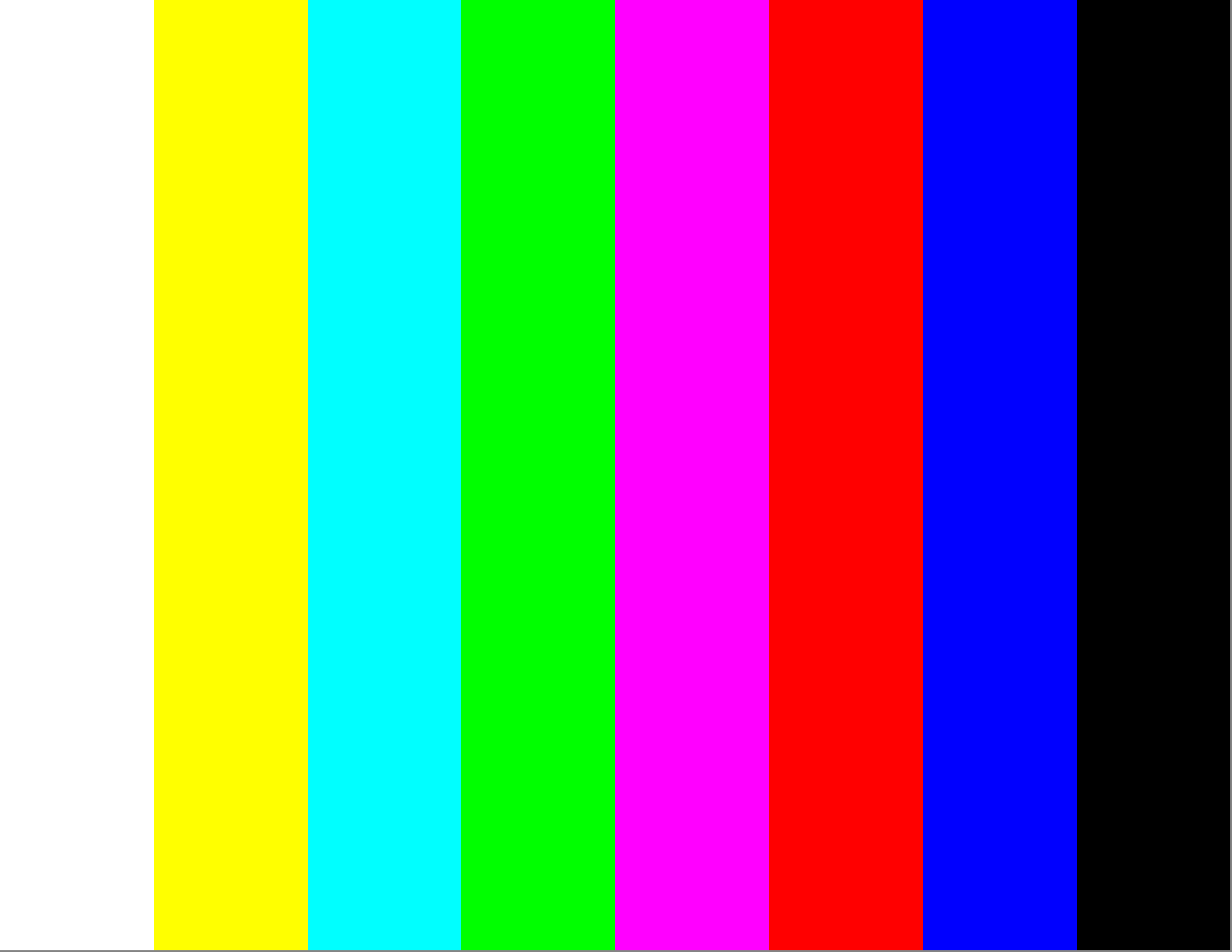


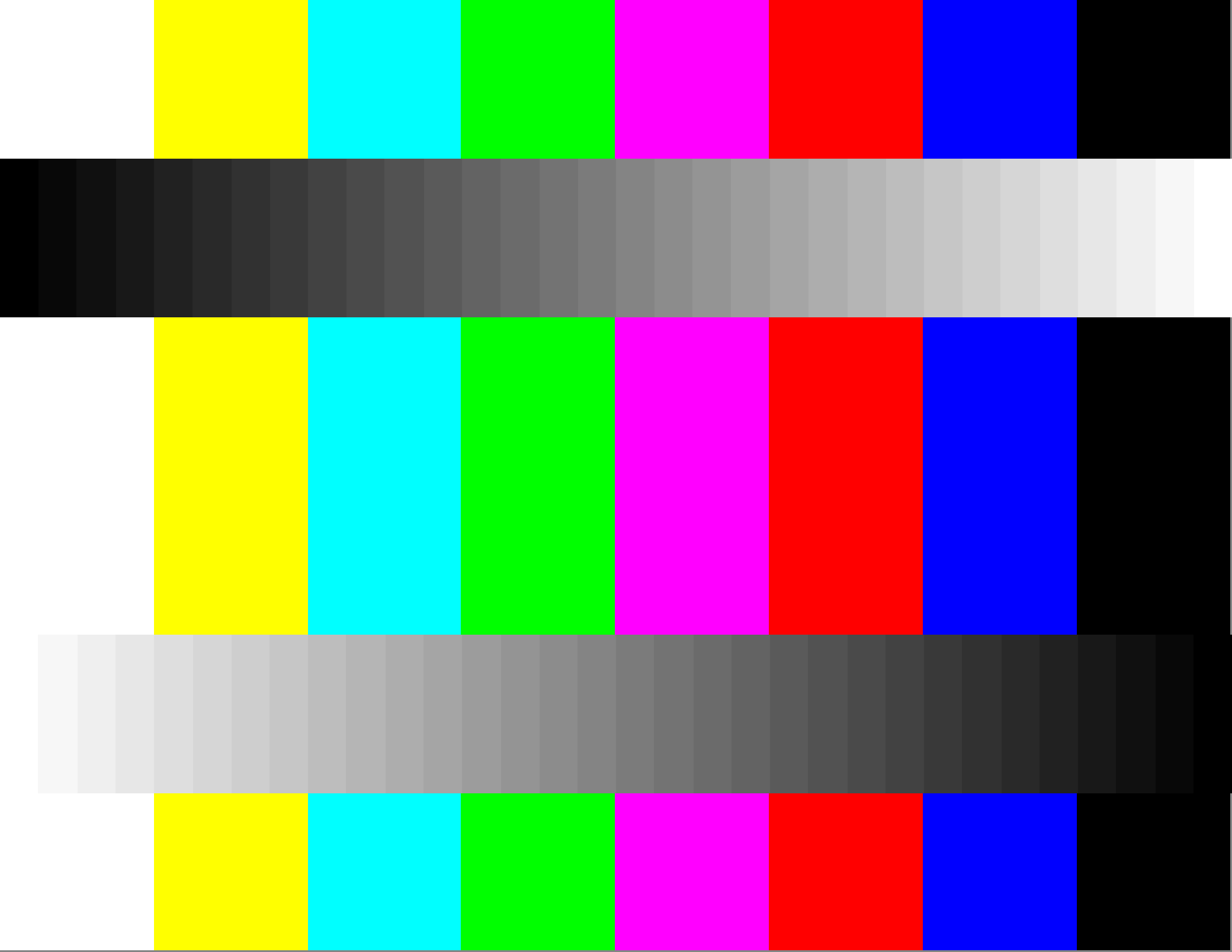


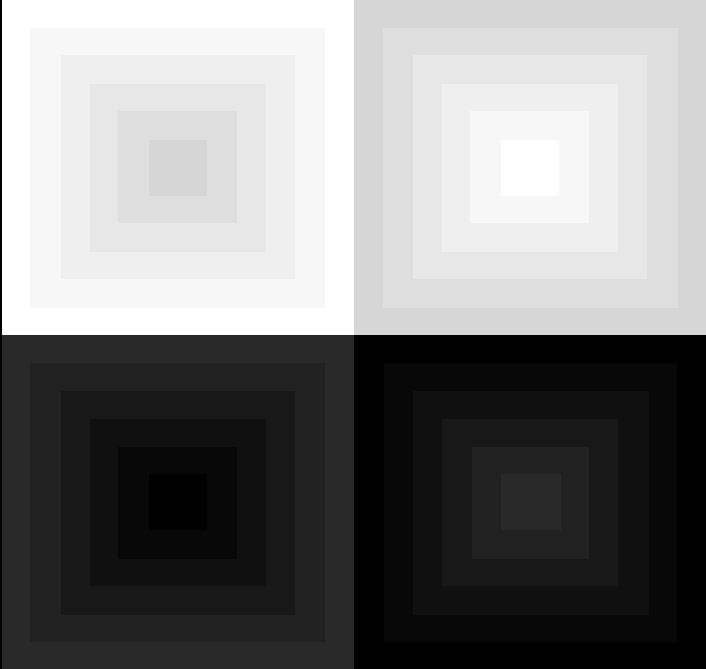


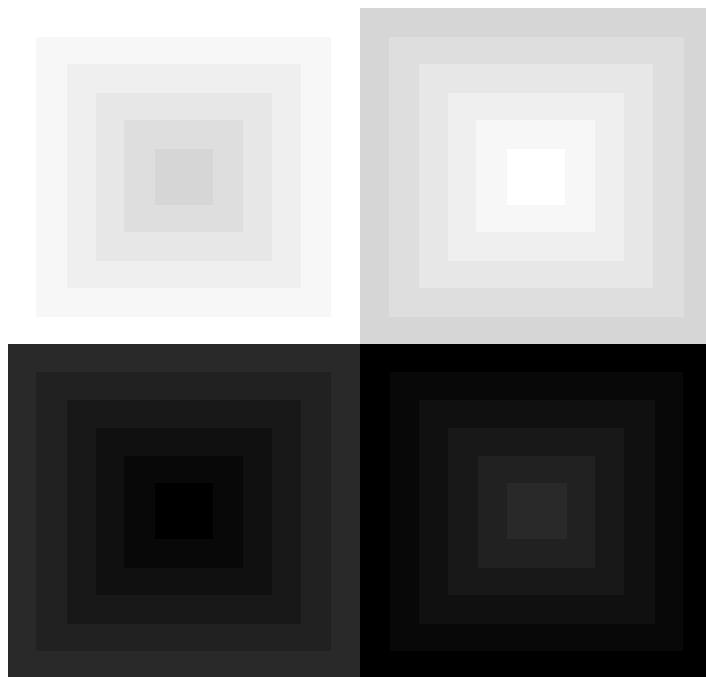
32 Gray Levels











TEXT SAMPLES

The quick brown fox jumps over the lazy dog. 0123456789

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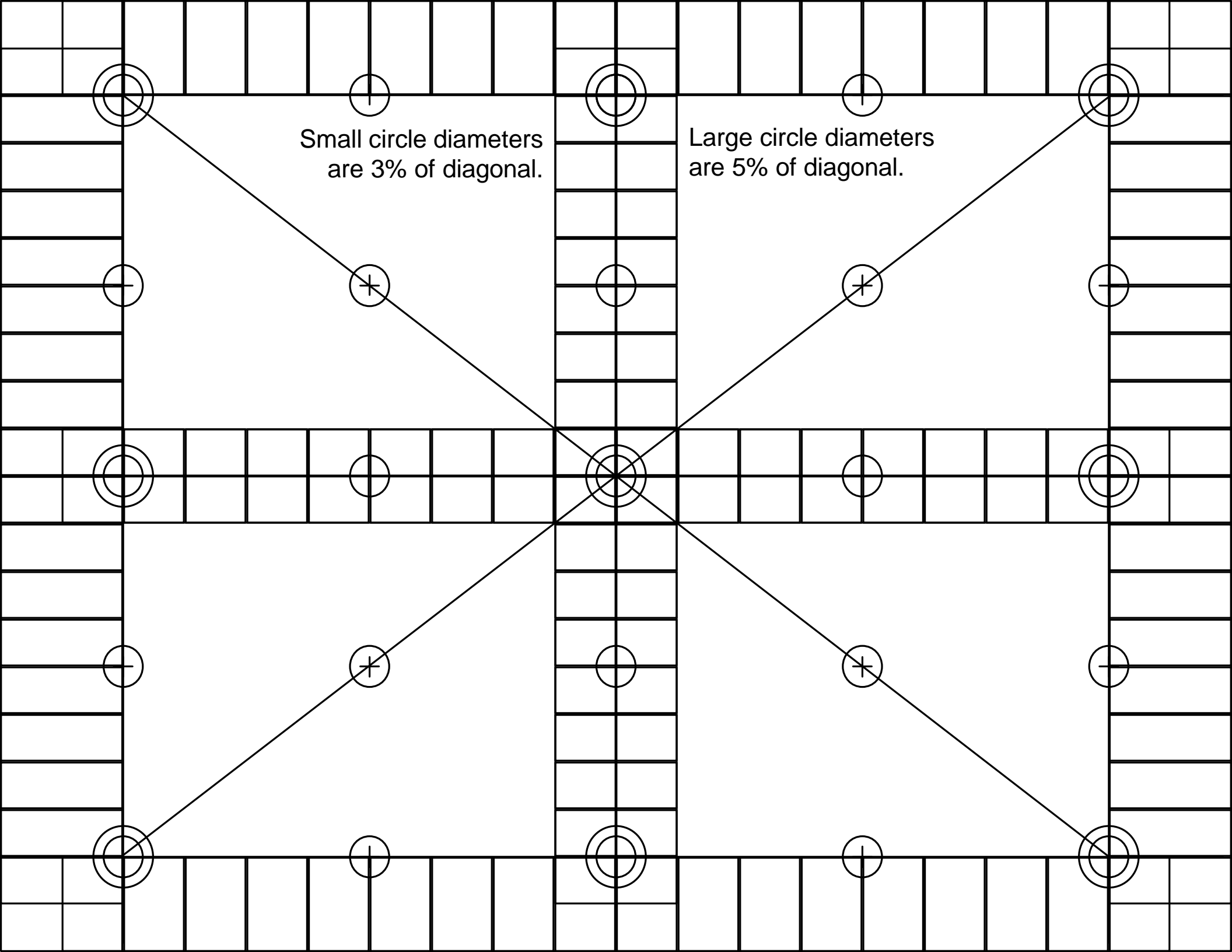
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Small circle diameters
are 3% of diagonal.

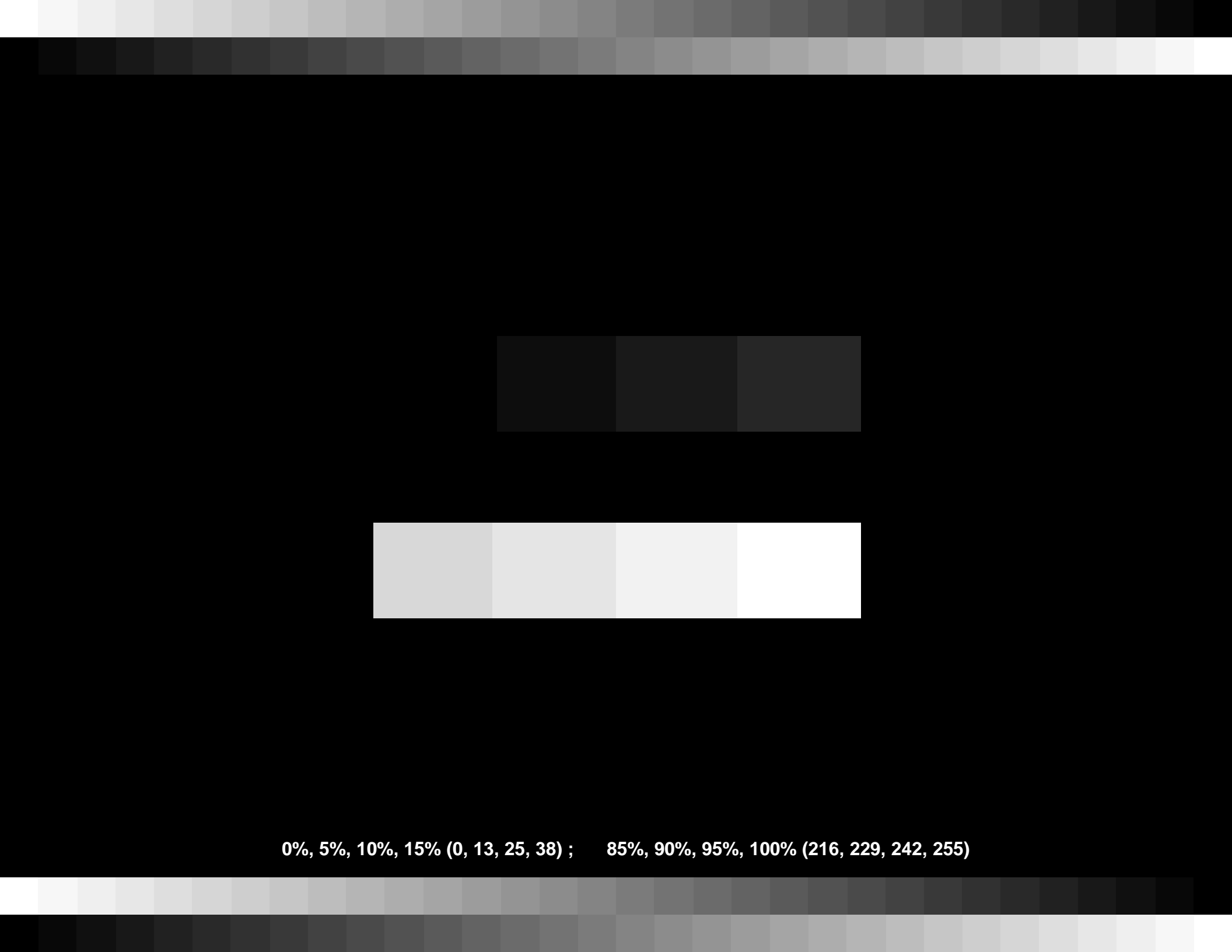
Large circle diameters
are 5% of diagonal.



0%, 5%, 10%, 15% (0, 13, 25, 38) ; 85%, 90%, 95%, 100% (216, 229, 242, 255)

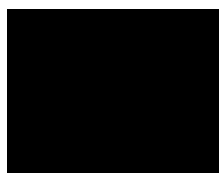


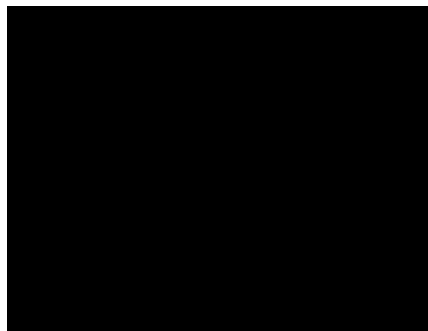
0%, 5%, 10%, 15% (0, 13, 25, 38) ; 85%, 90%, 95%, 100% (216, 229, 242, 255)

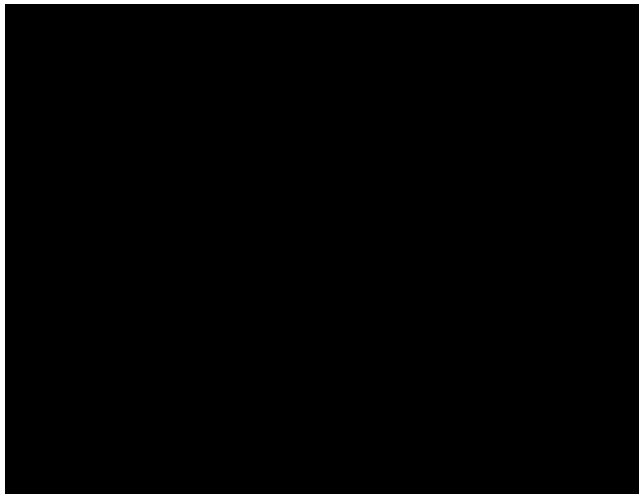


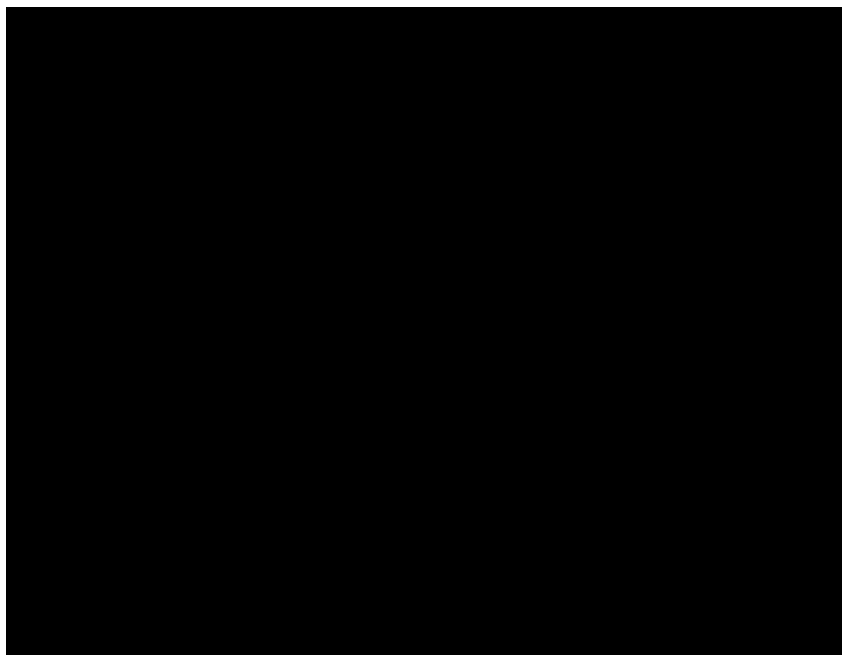
0%, 5%, 10%, 15% (0, 13, 25, 38) ; 85%, 90%, 95%, 100% (216, 229, 242, 255)



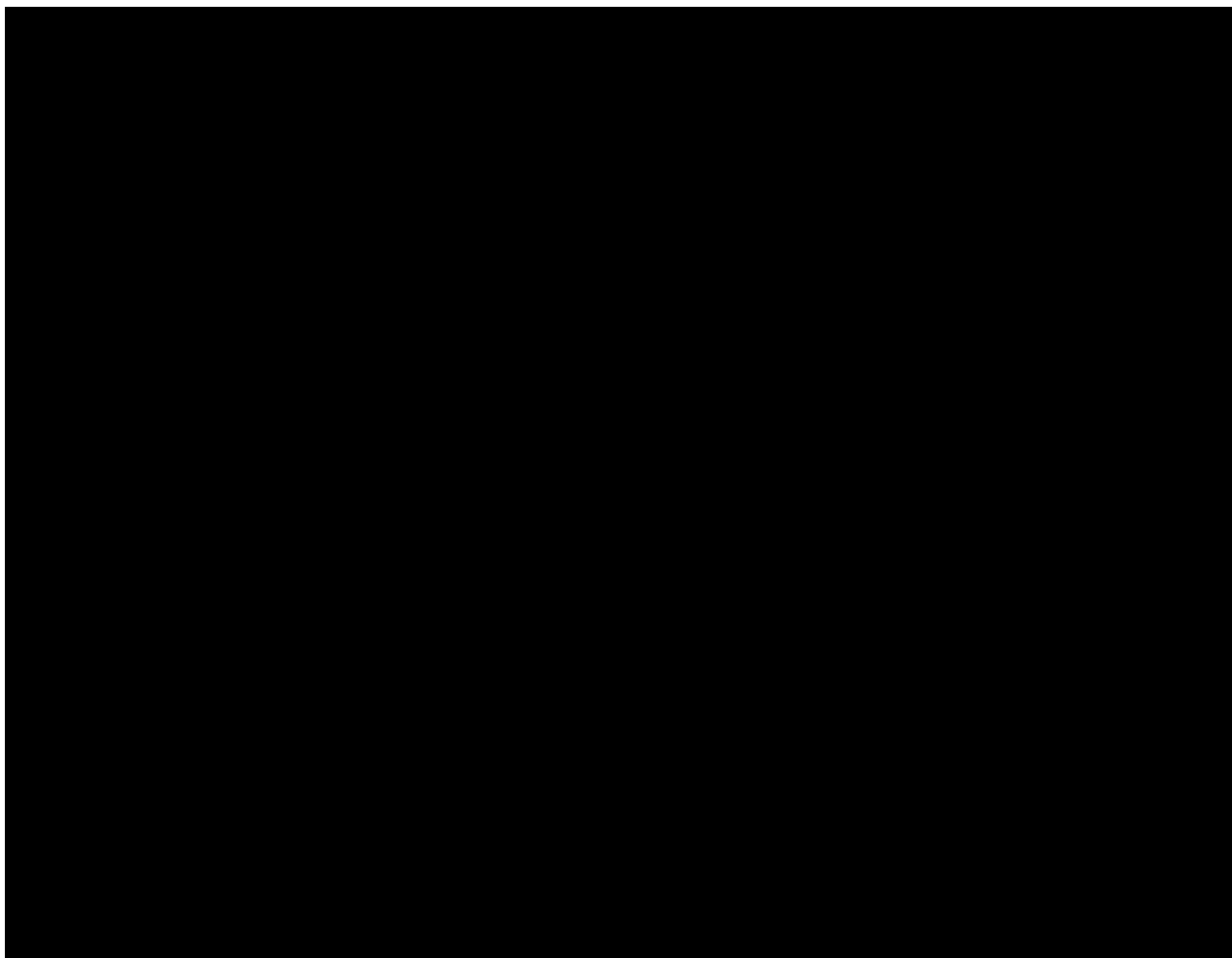


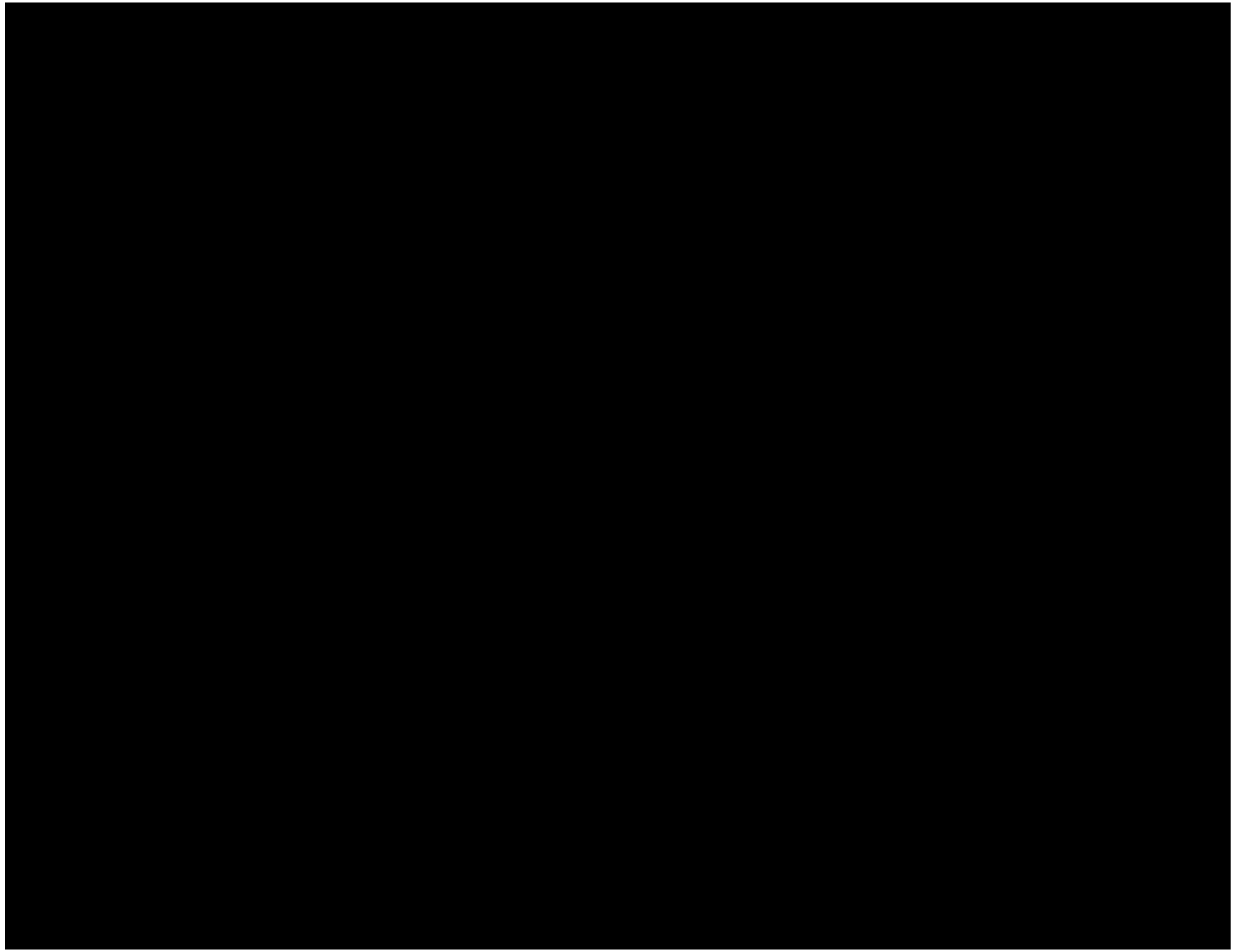


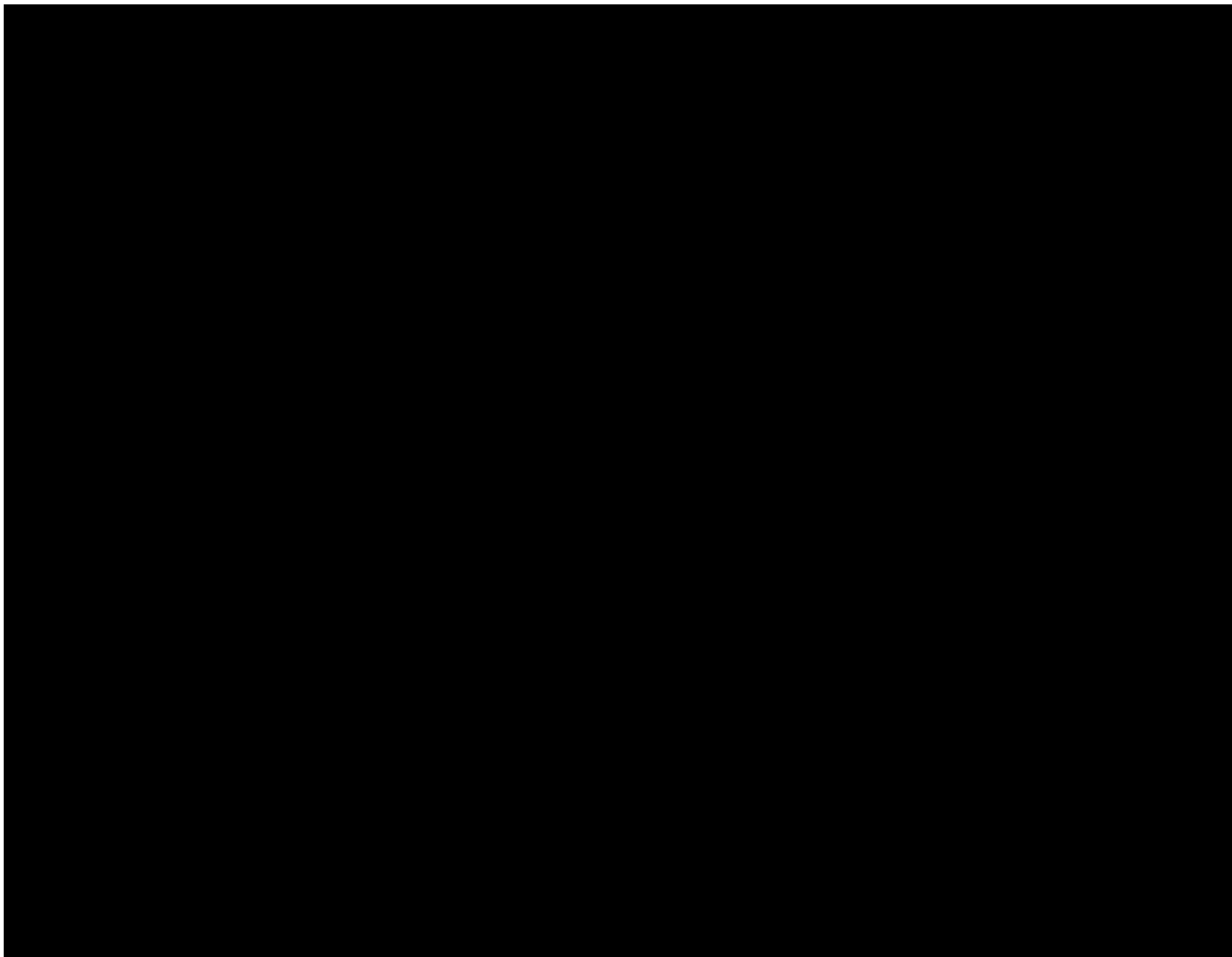


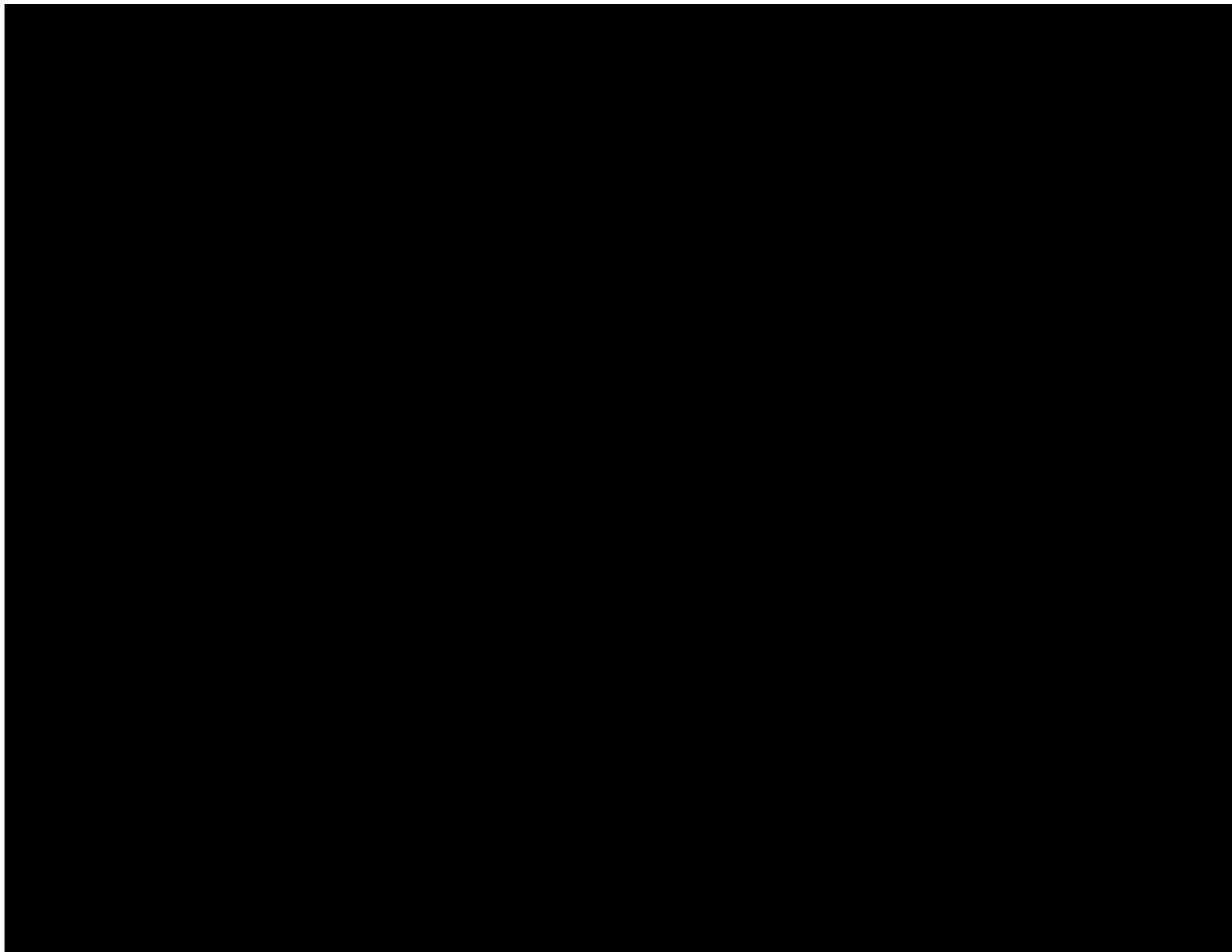






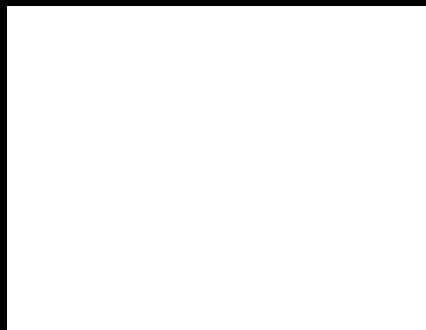


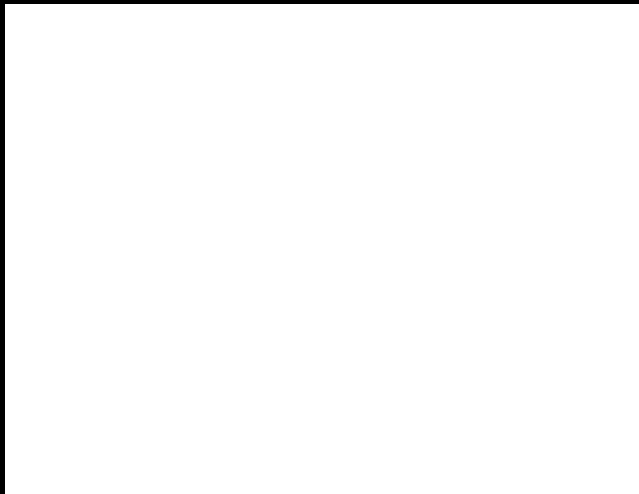








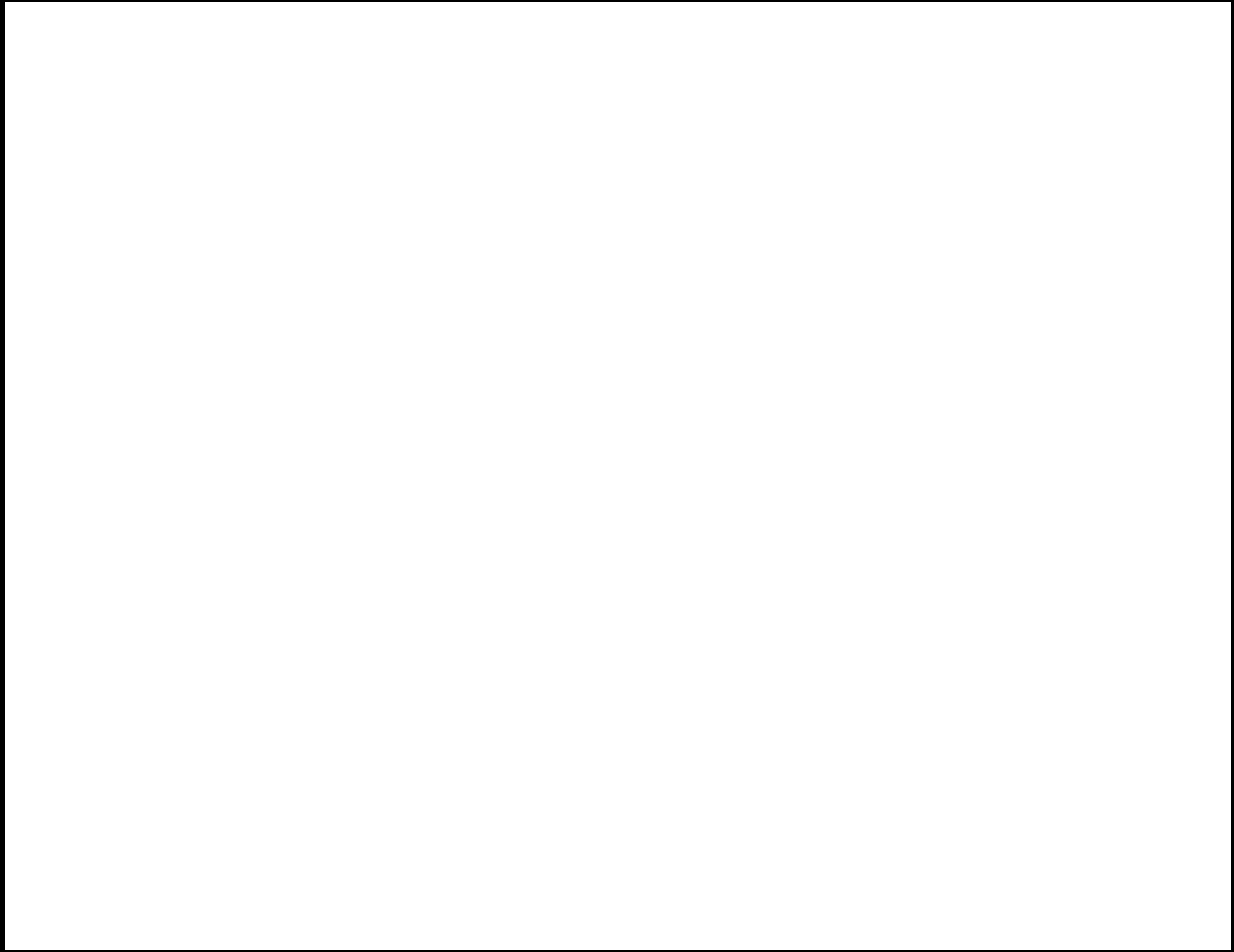






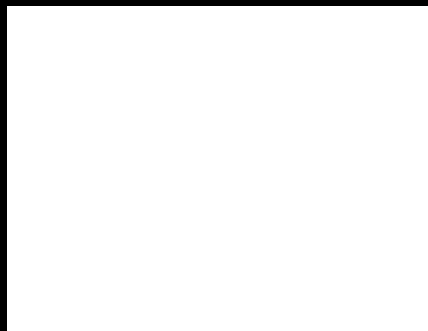


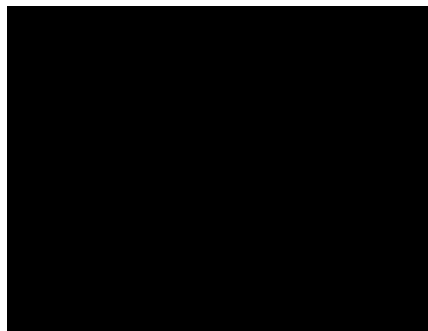


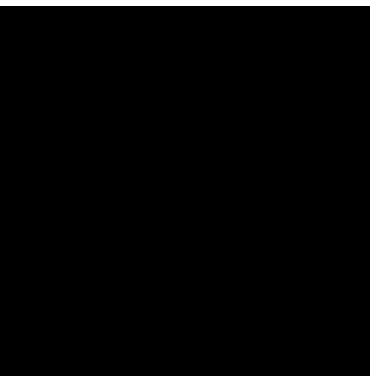
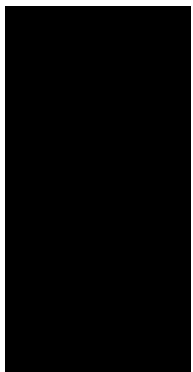
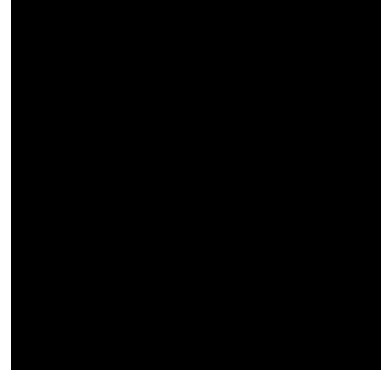
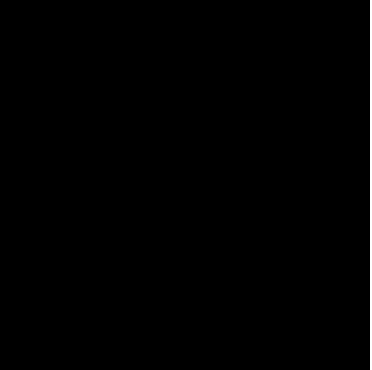


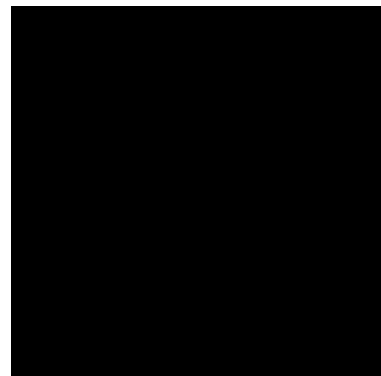
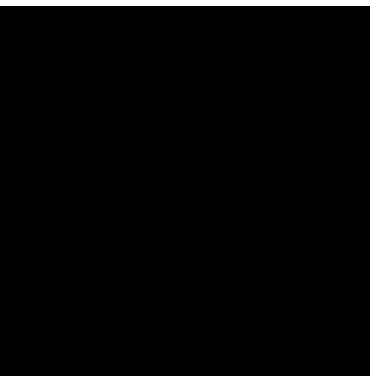
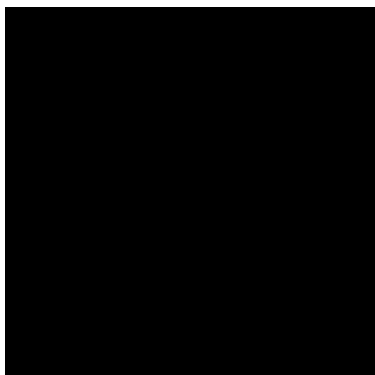
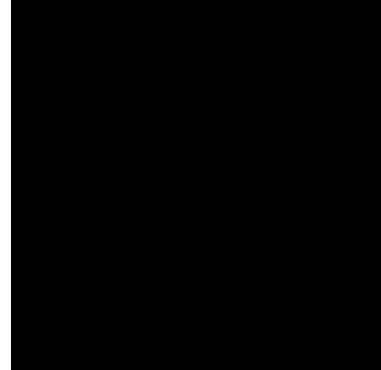
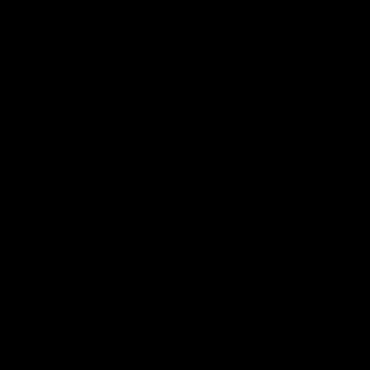


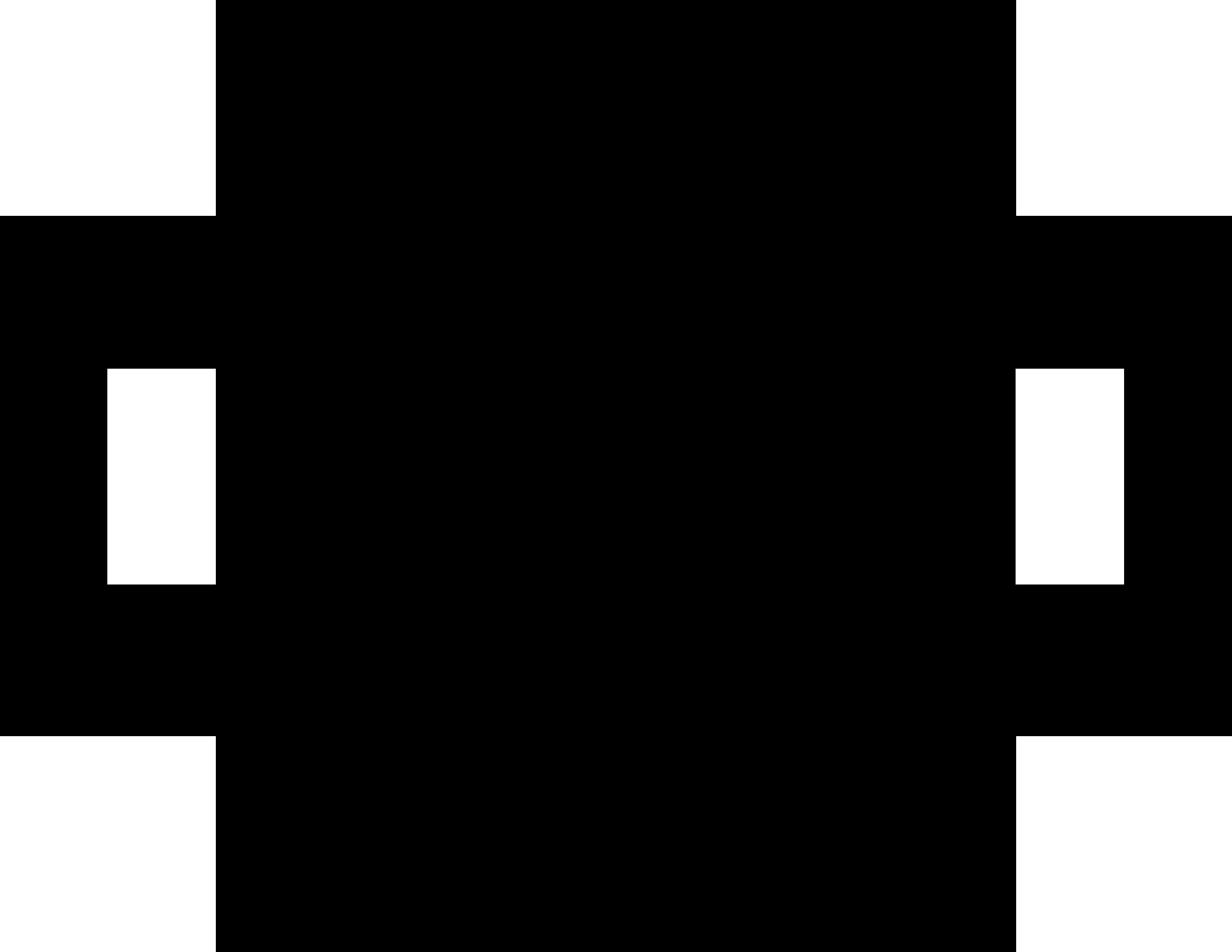


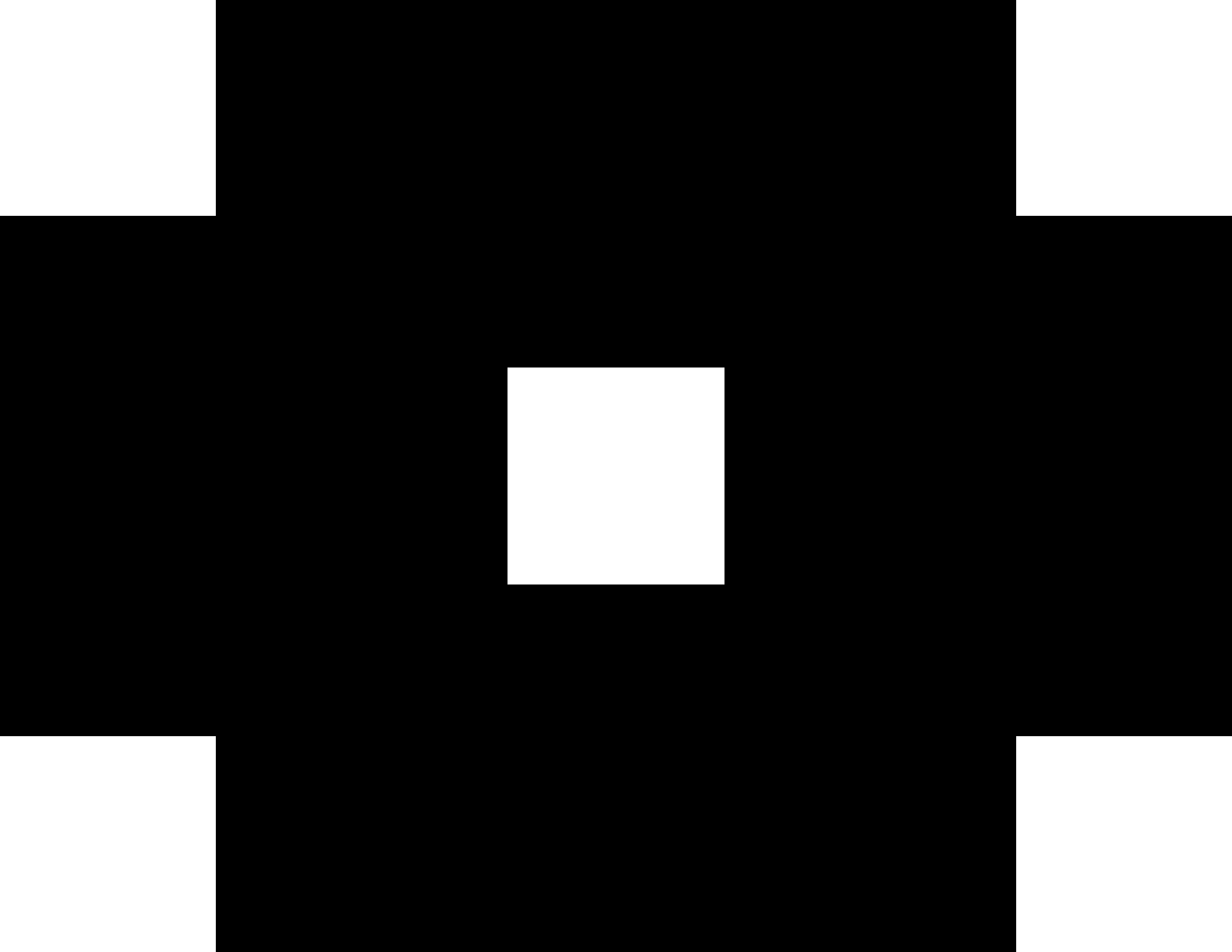


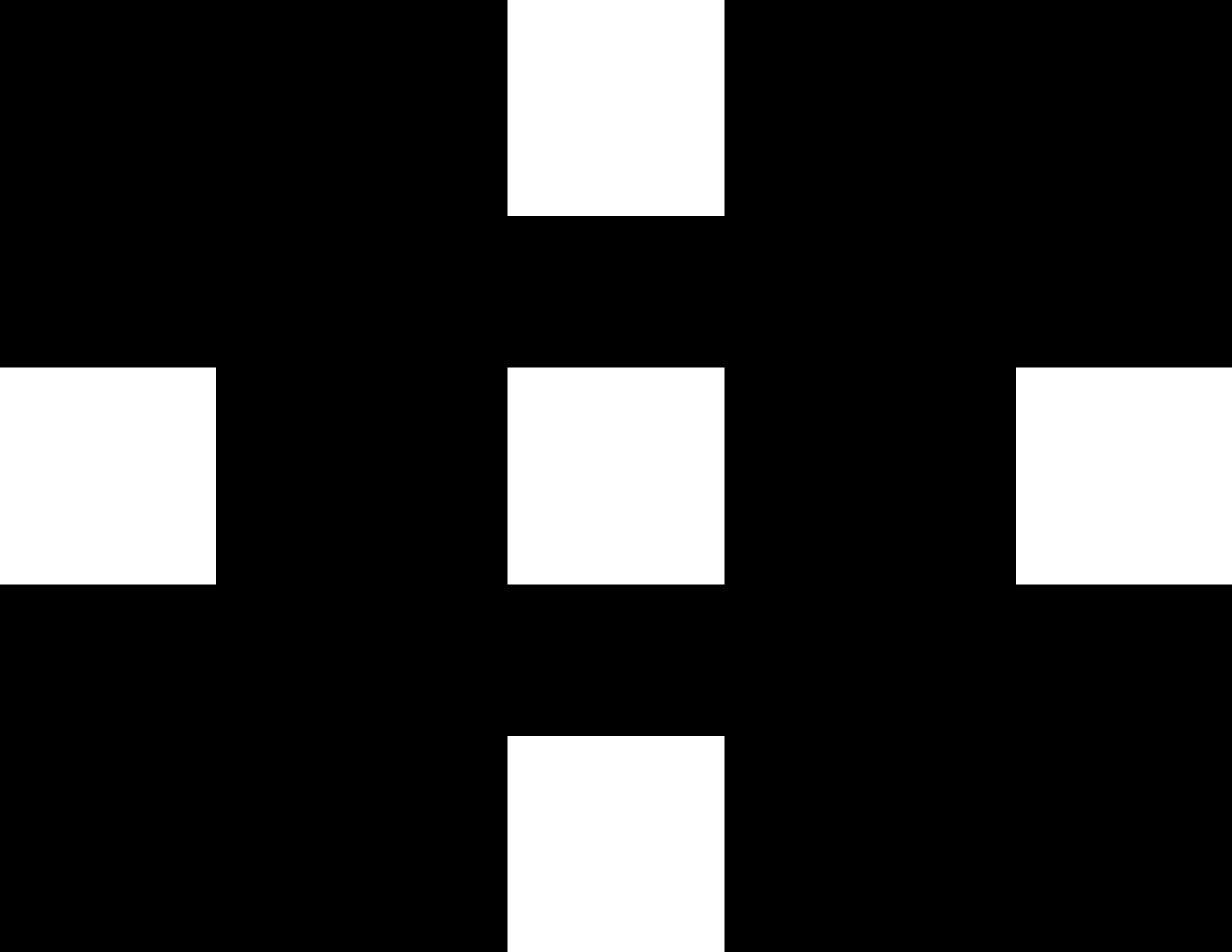


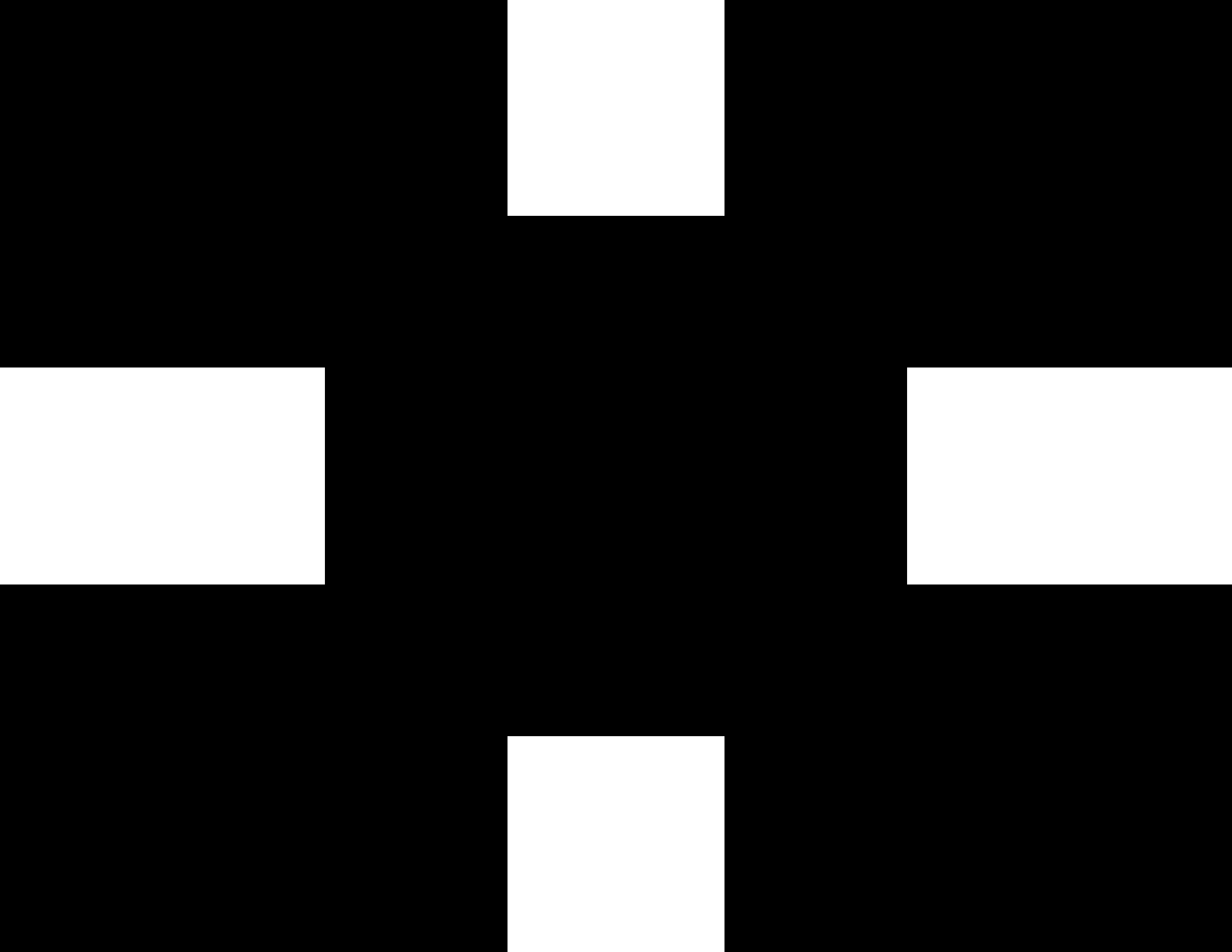


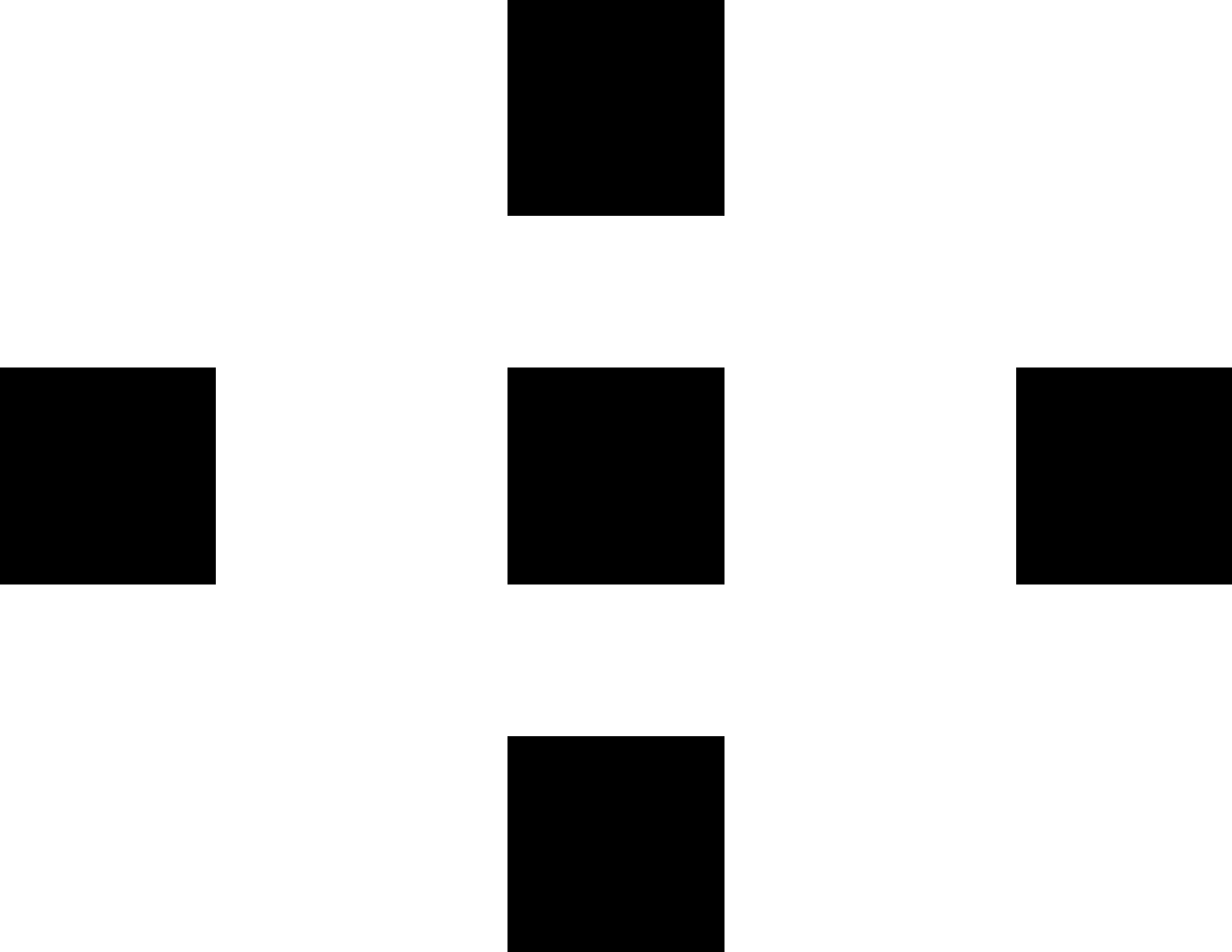


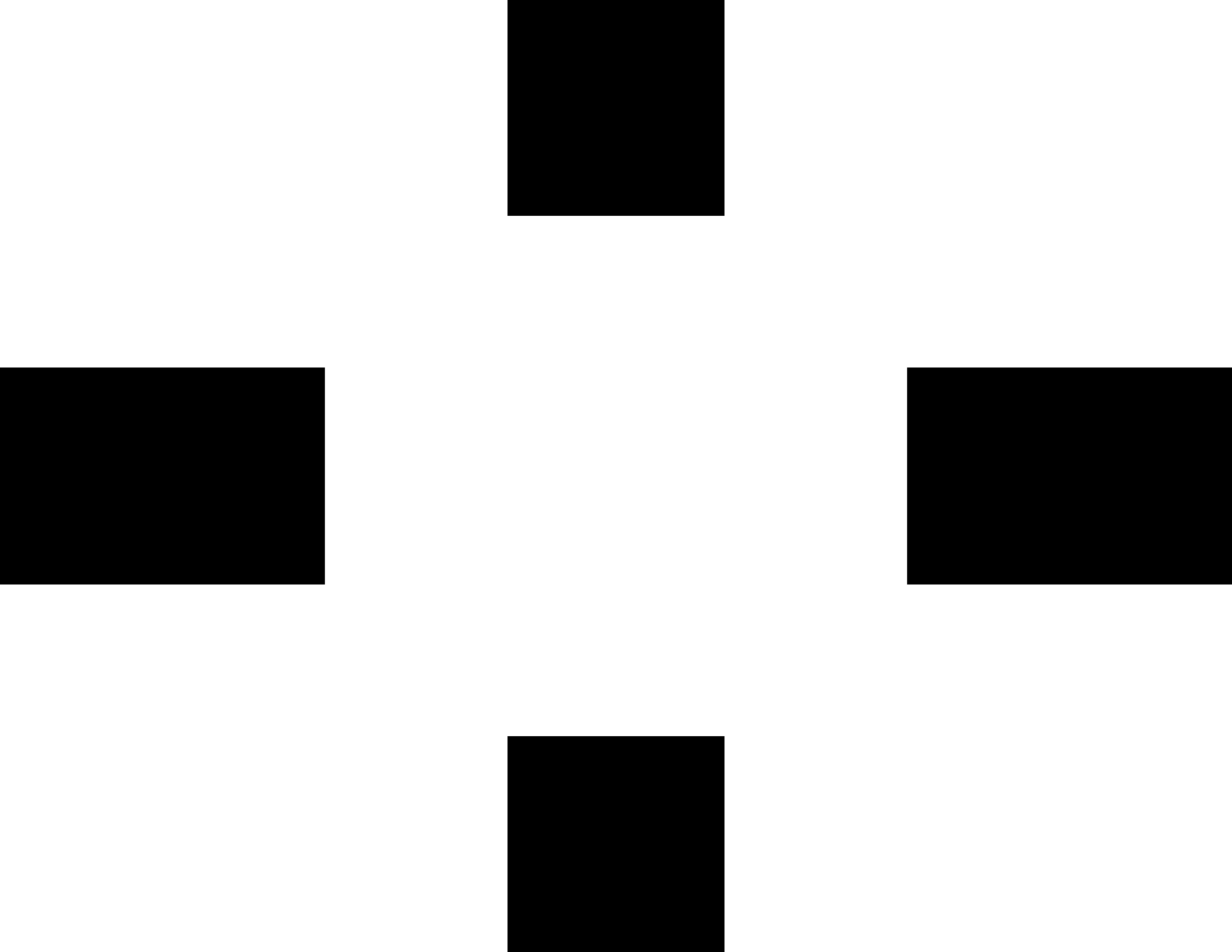


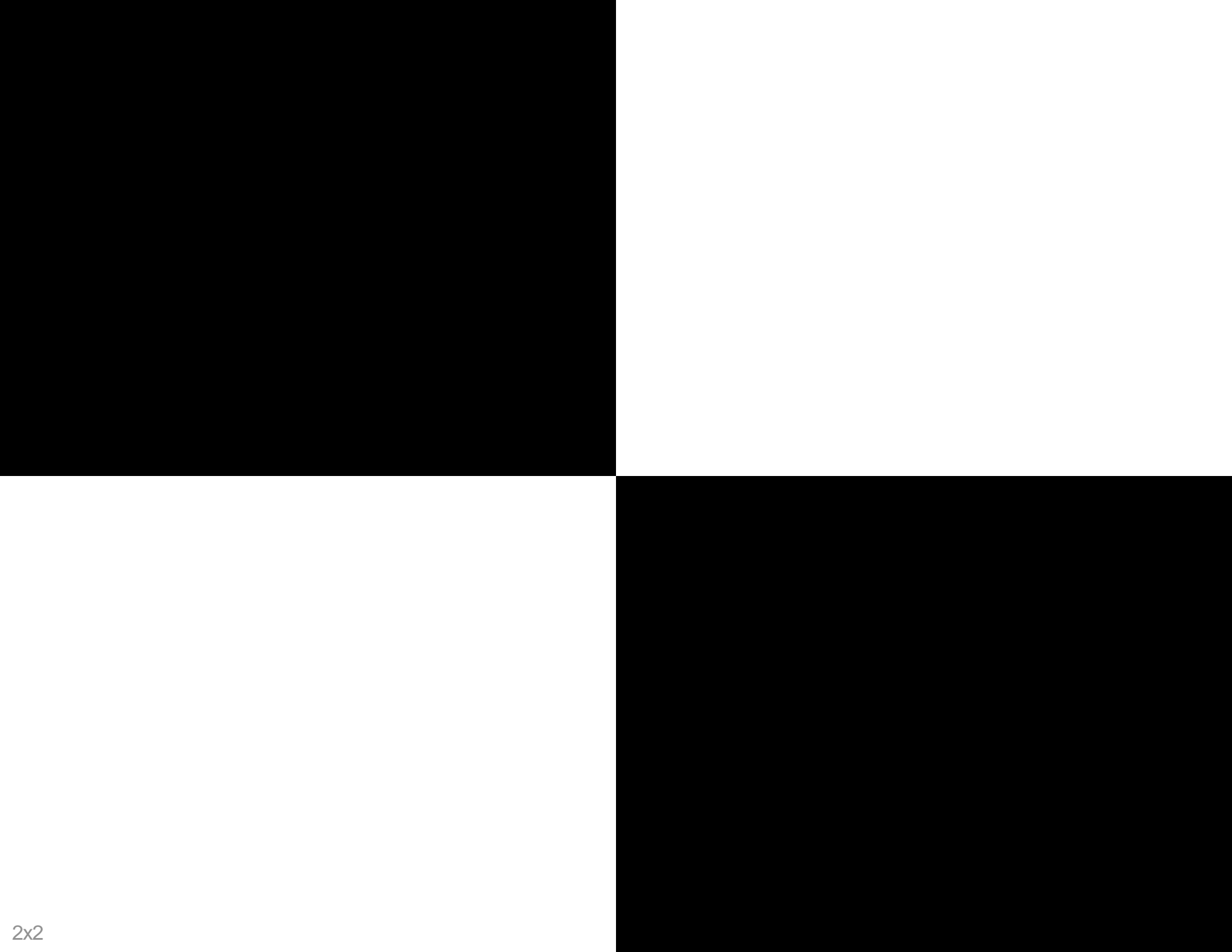


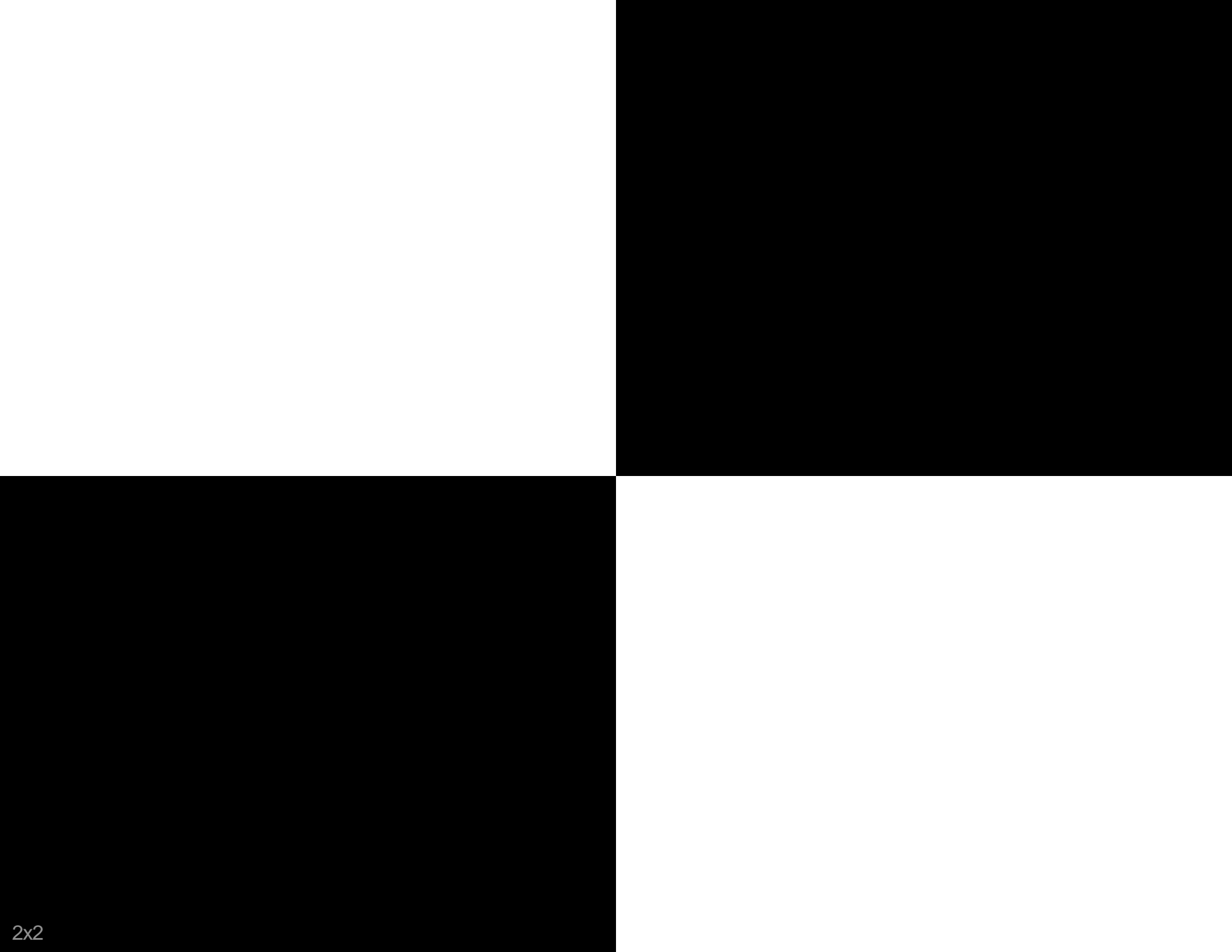


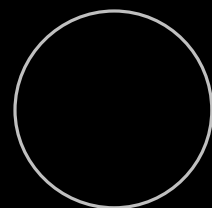
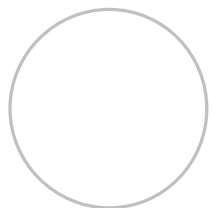
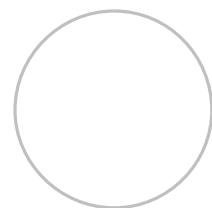
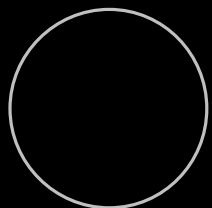


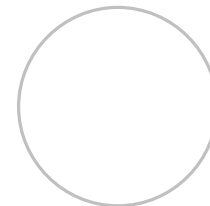
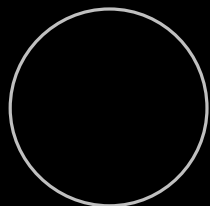
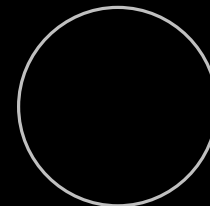
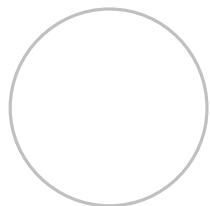


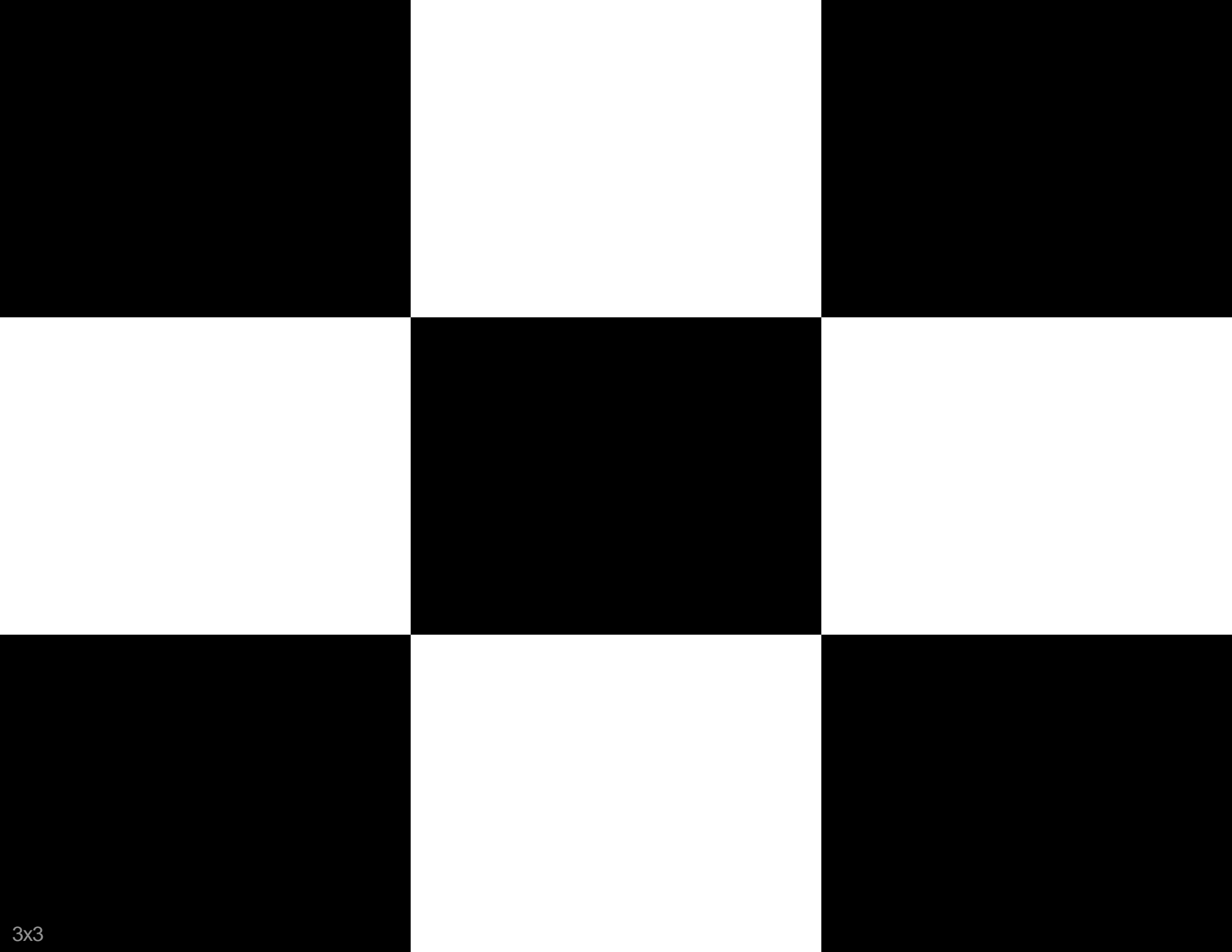


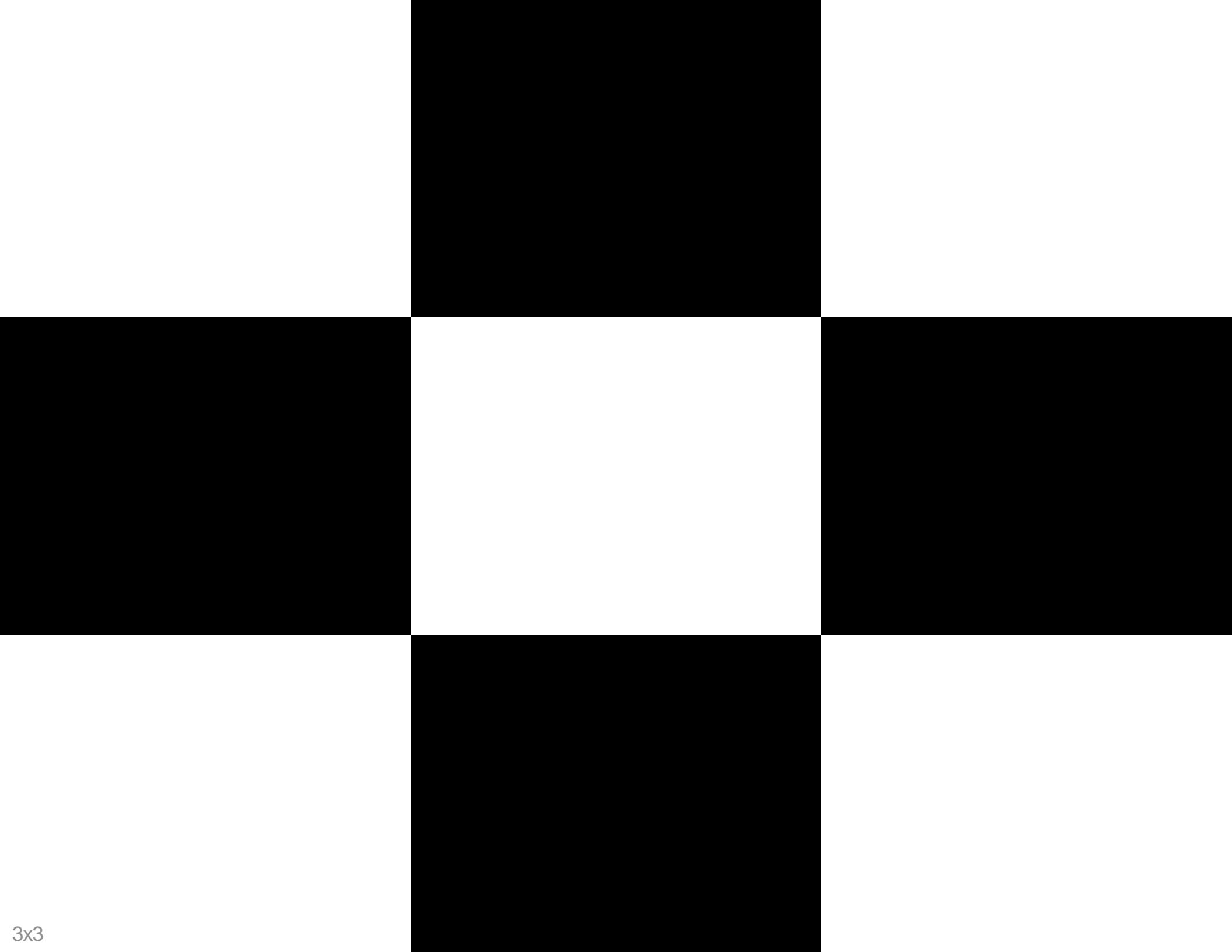


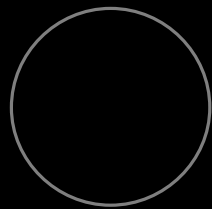
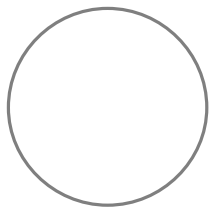
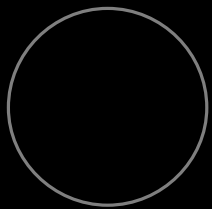
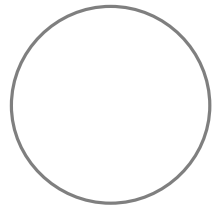
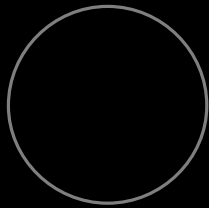
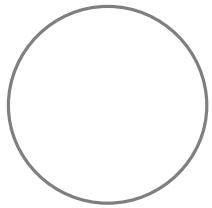
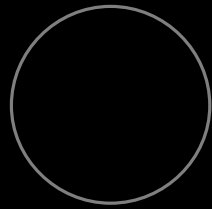
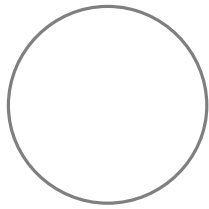
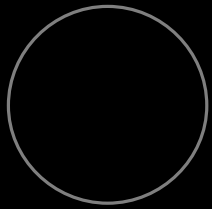
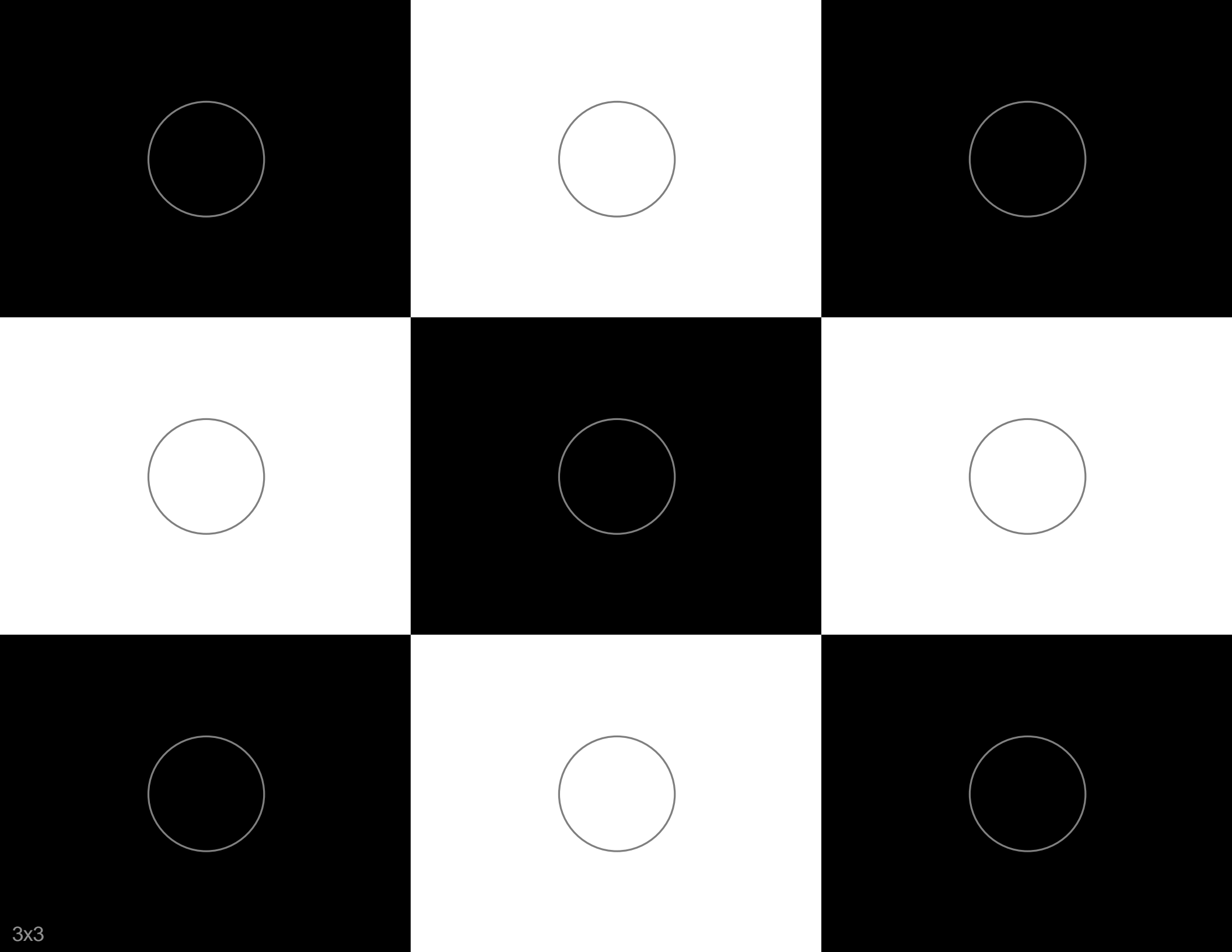


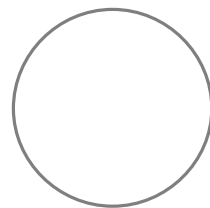
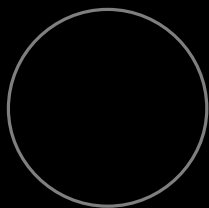
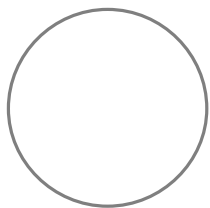
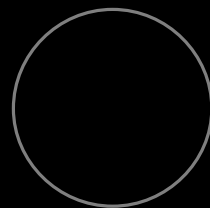
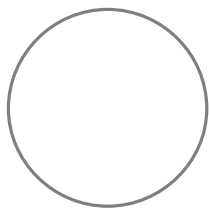
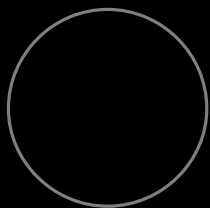
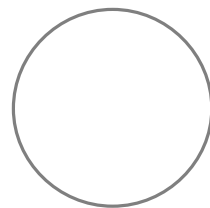
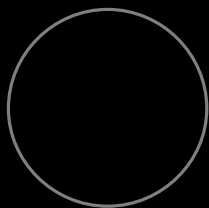
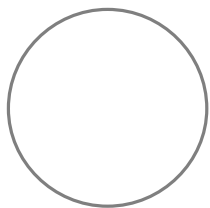


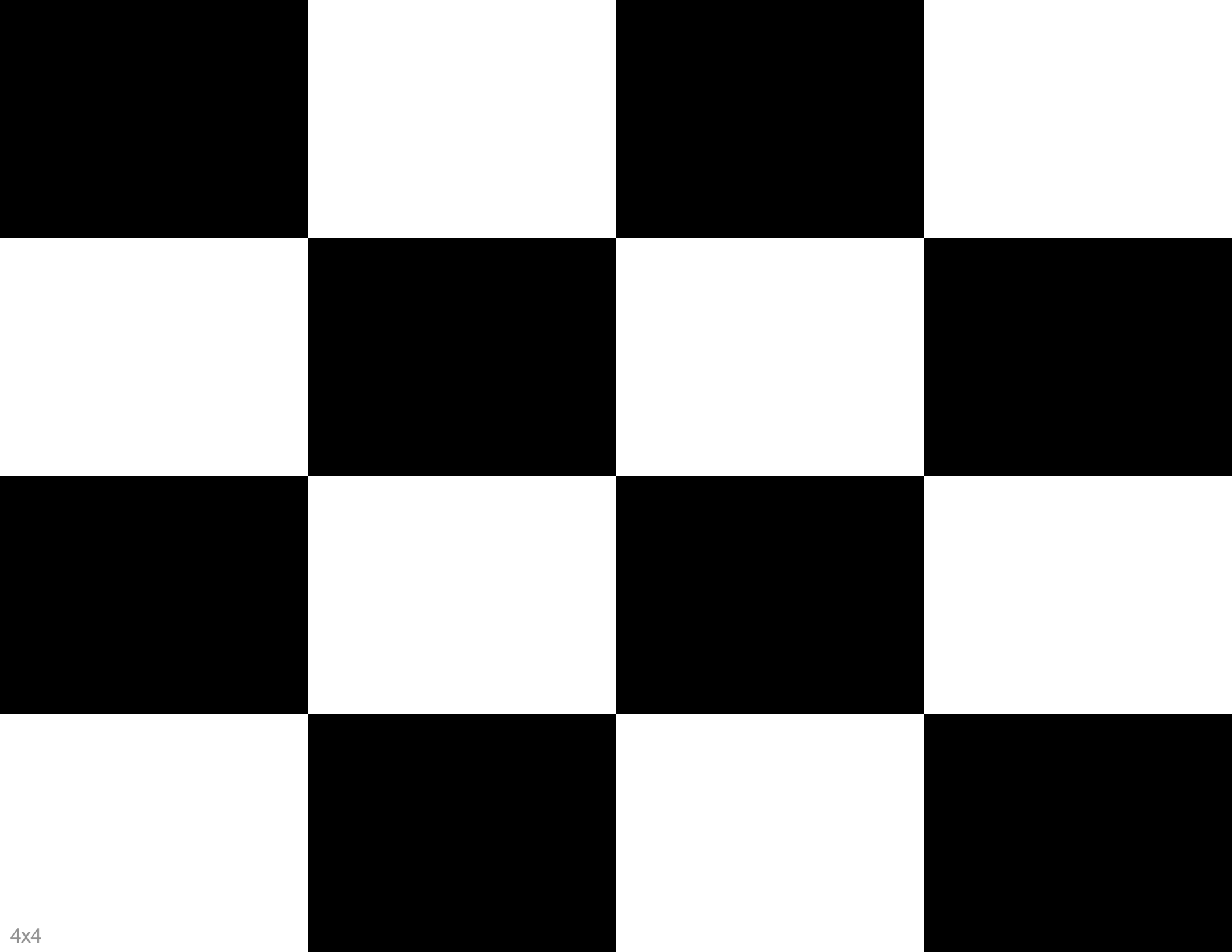


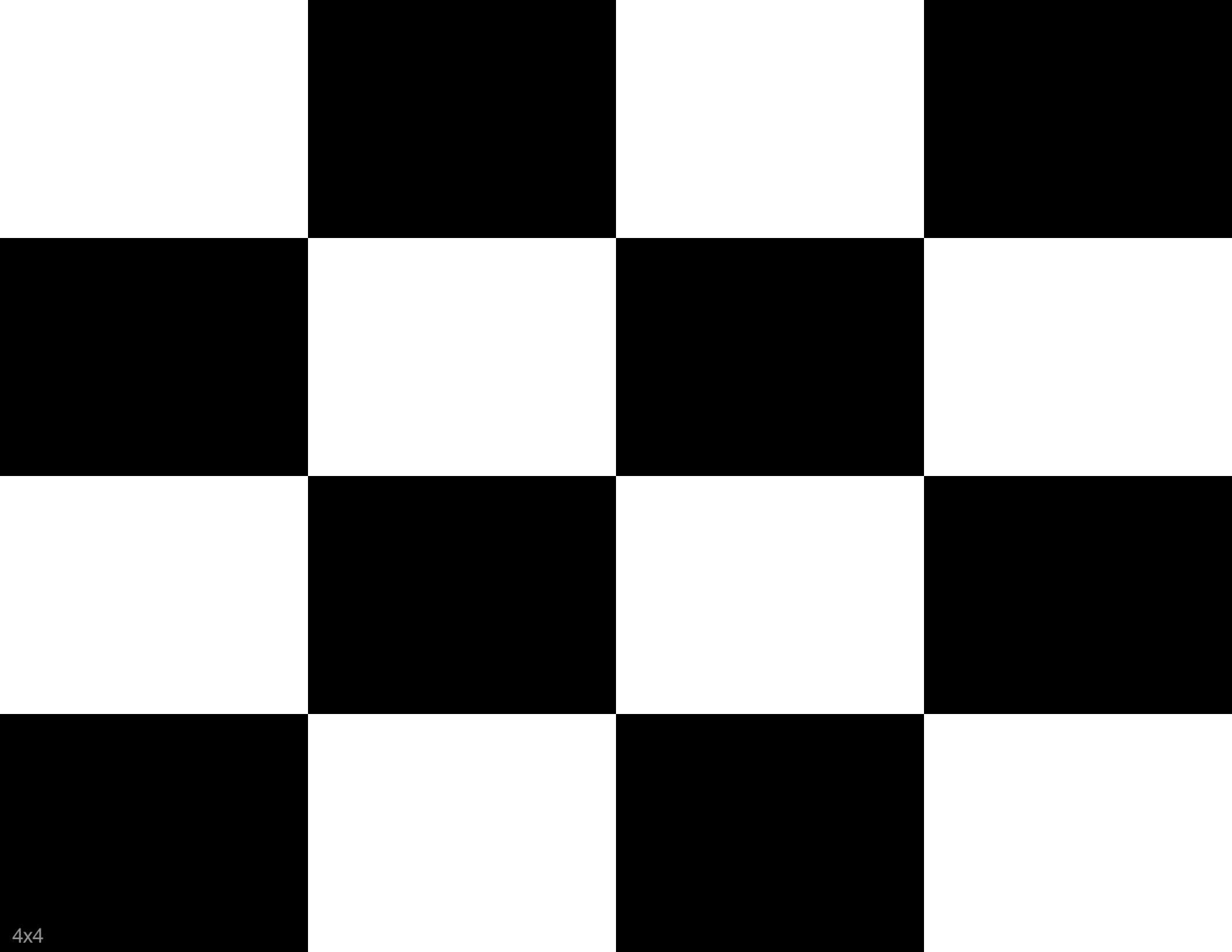


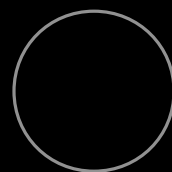
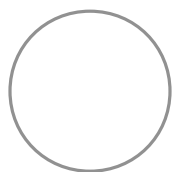
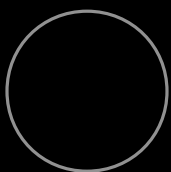
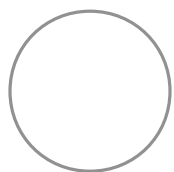
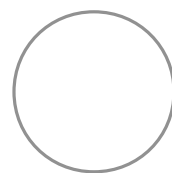
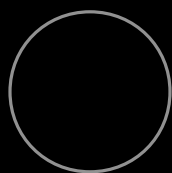
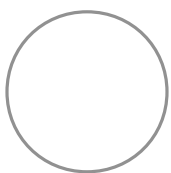
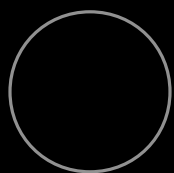
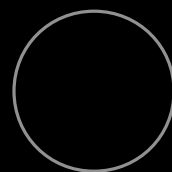
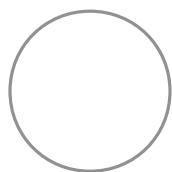
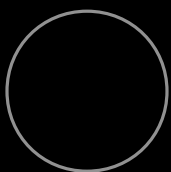
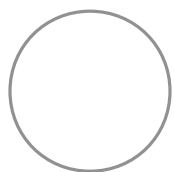
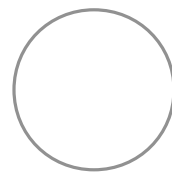
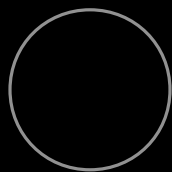
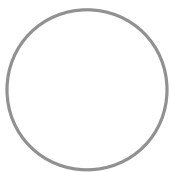
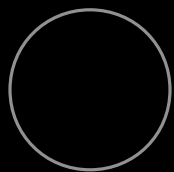


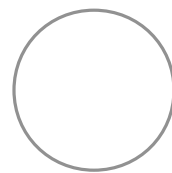
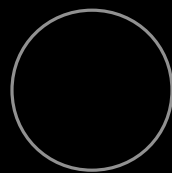
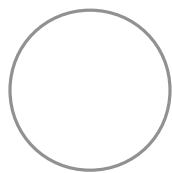
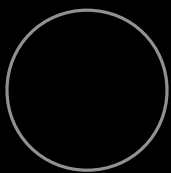
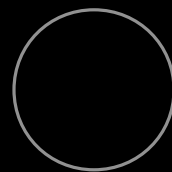
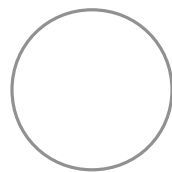
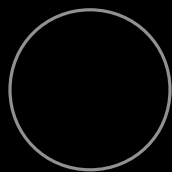
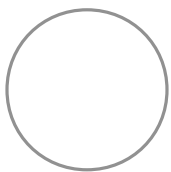
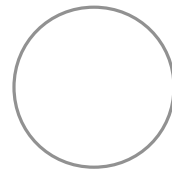
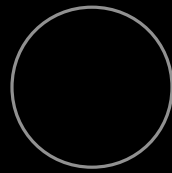
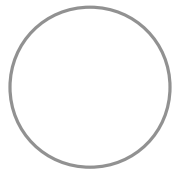
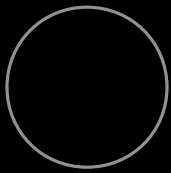
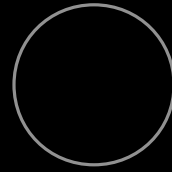
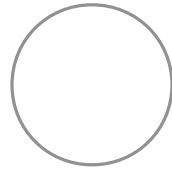
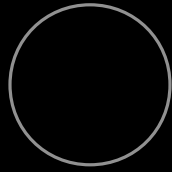
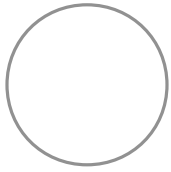


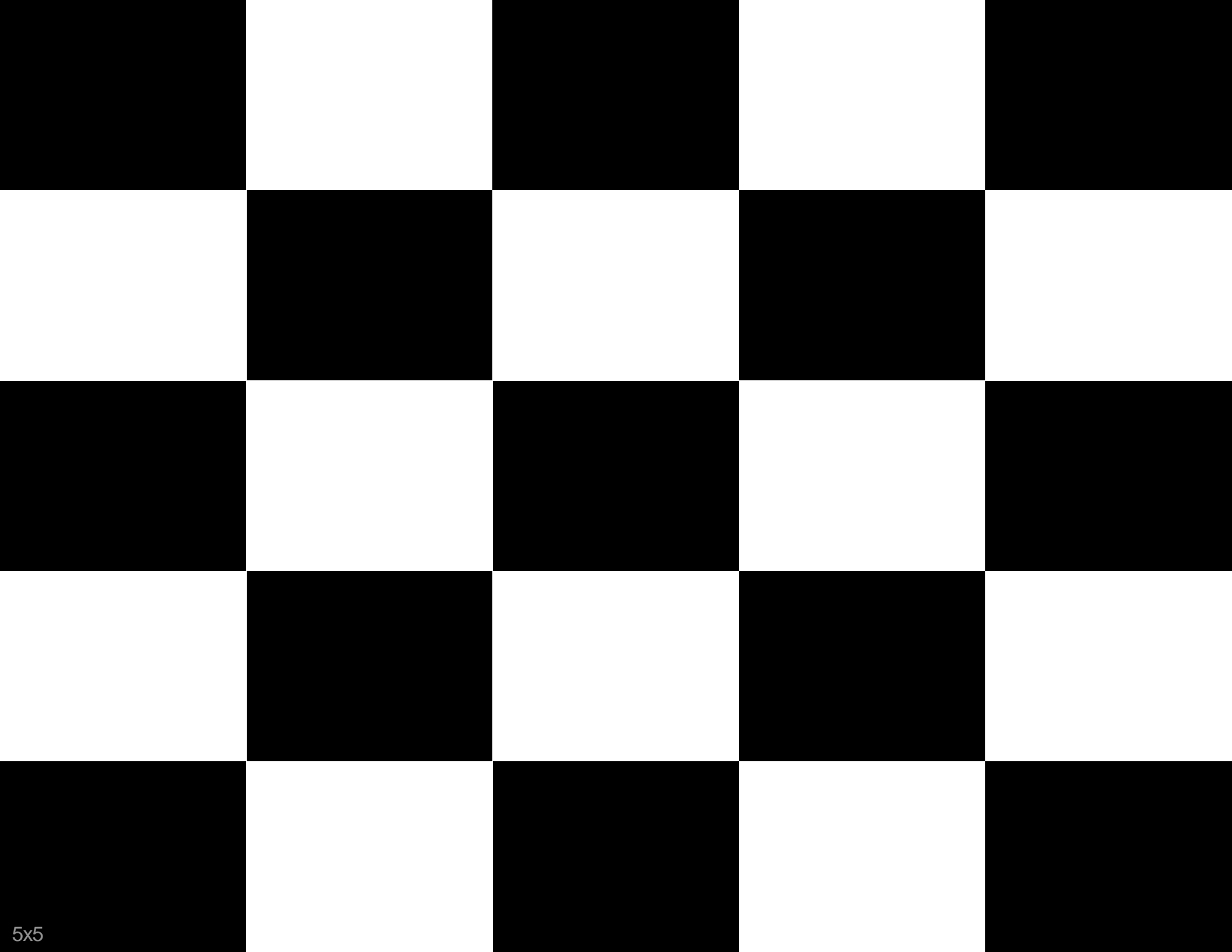


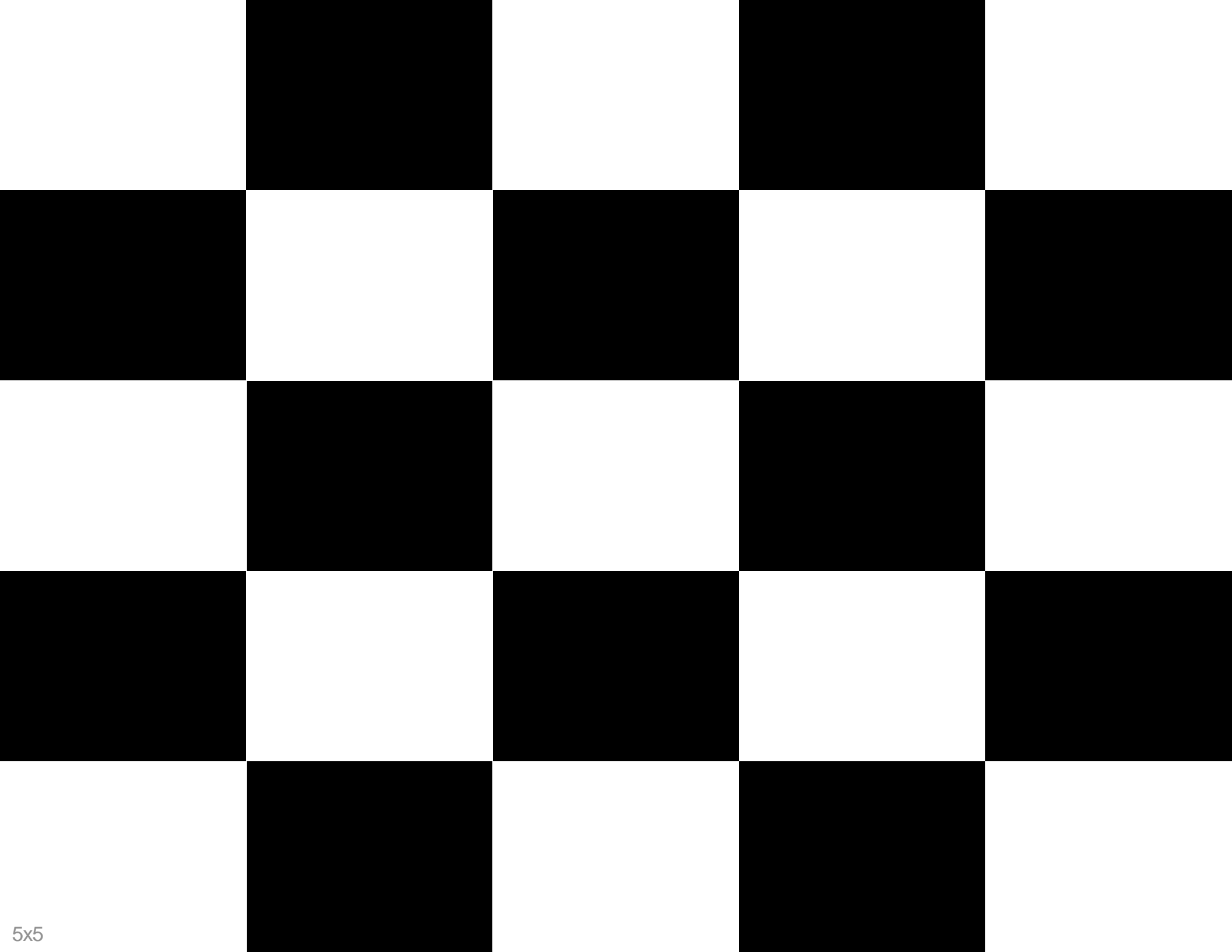


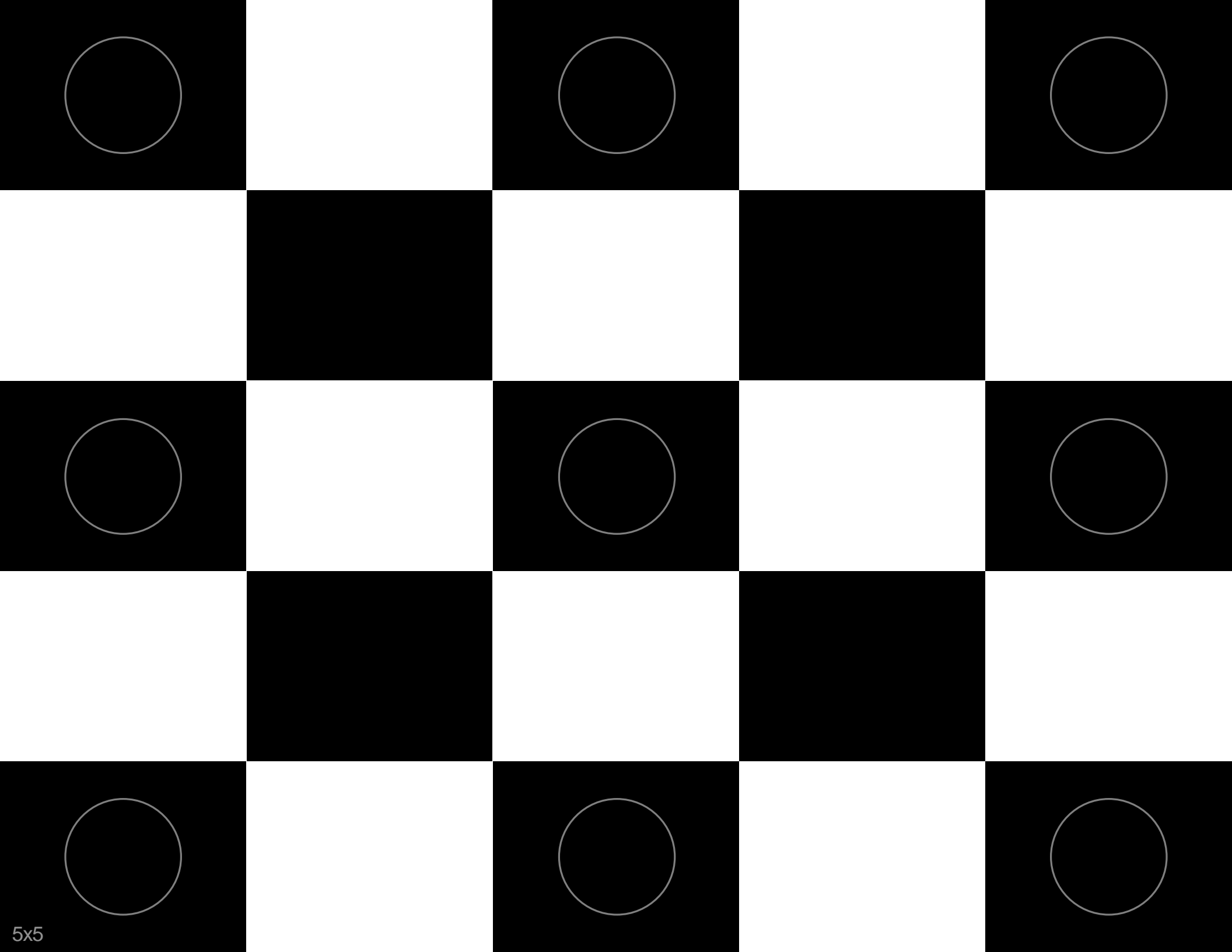


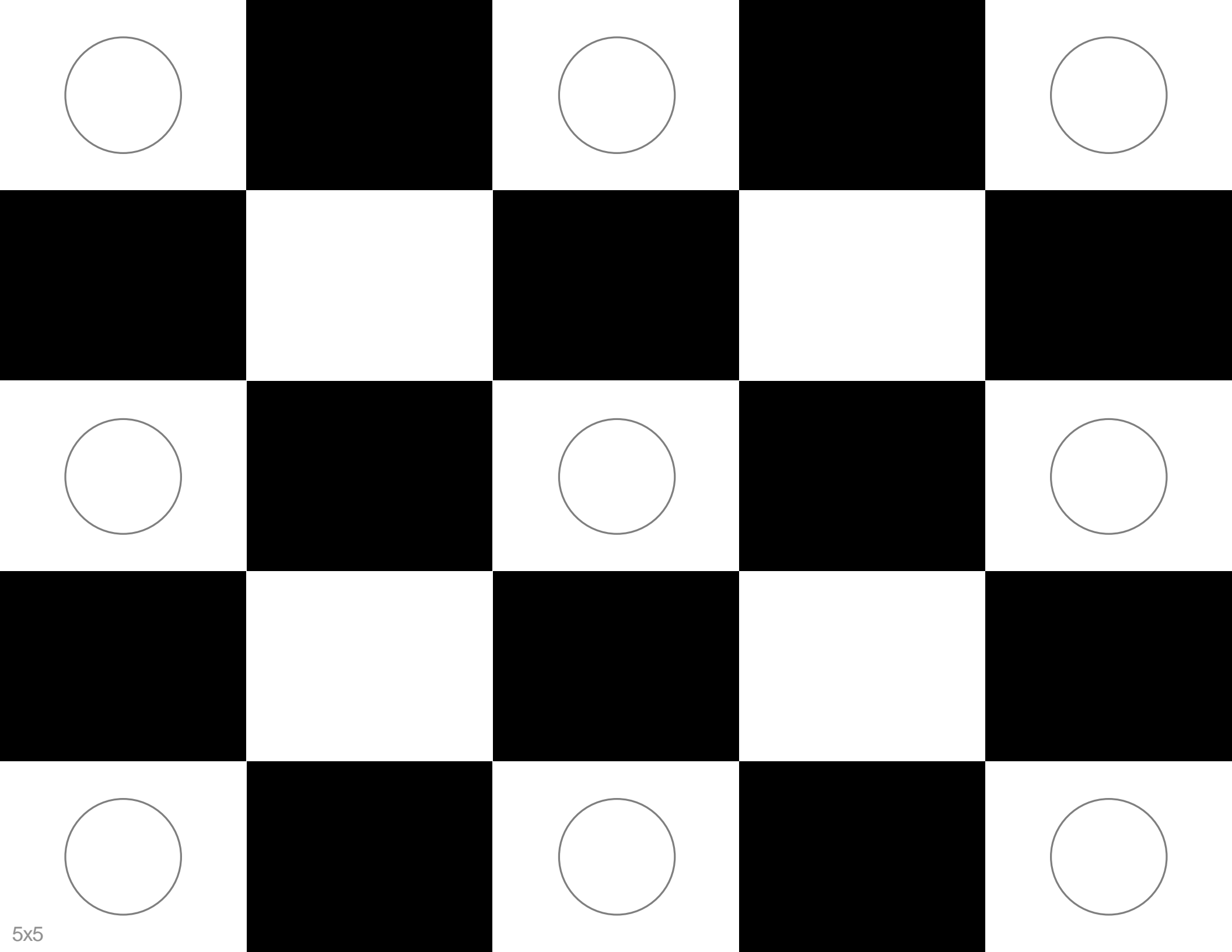




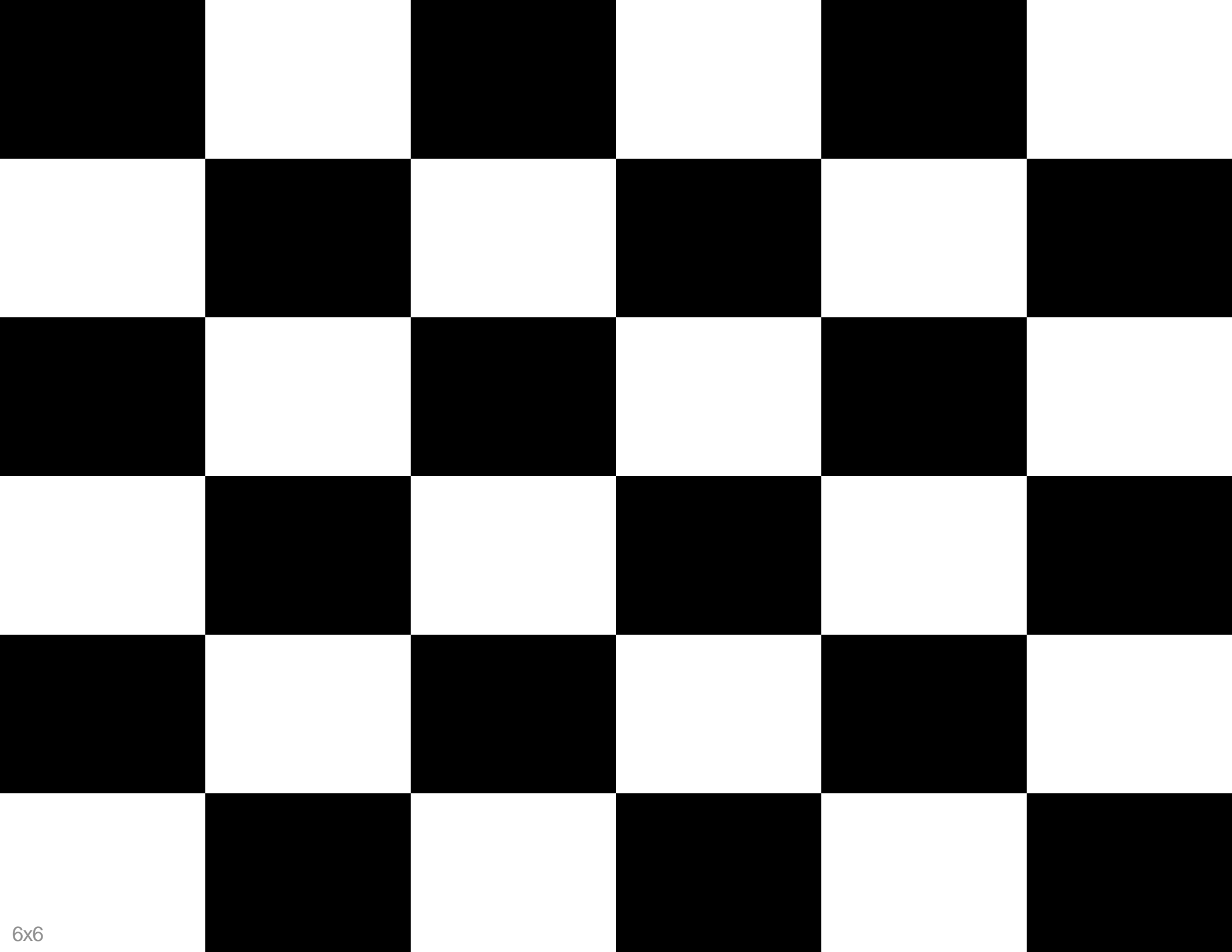


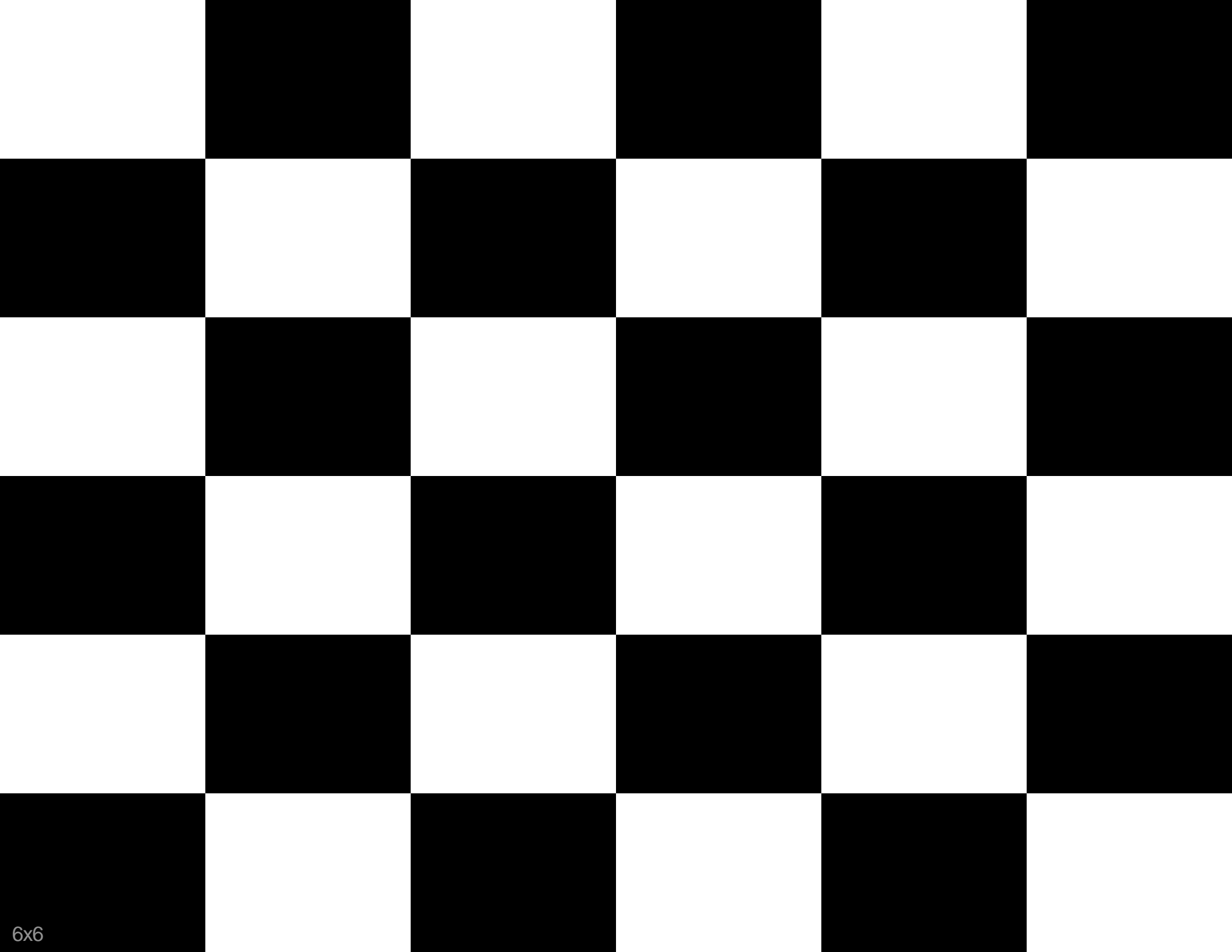


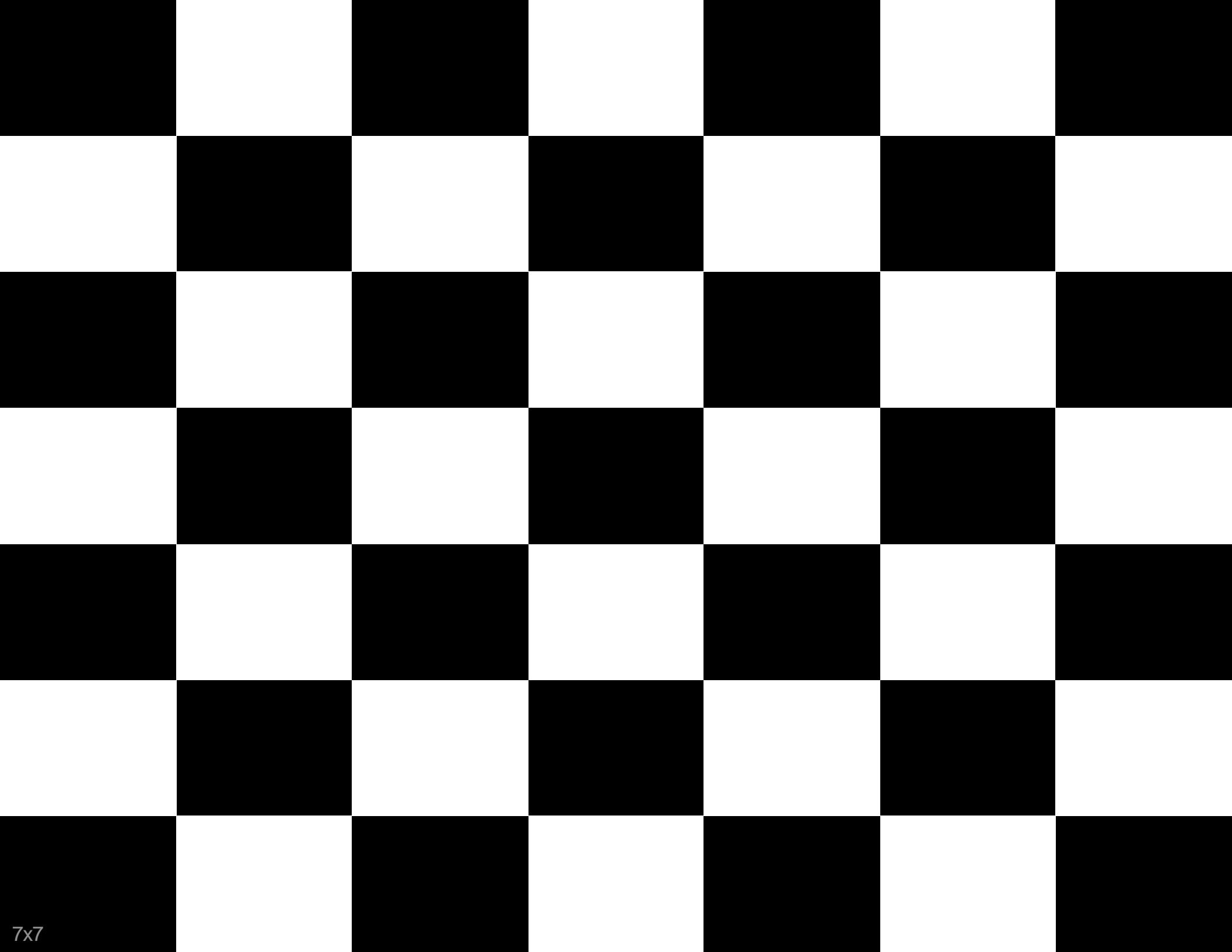


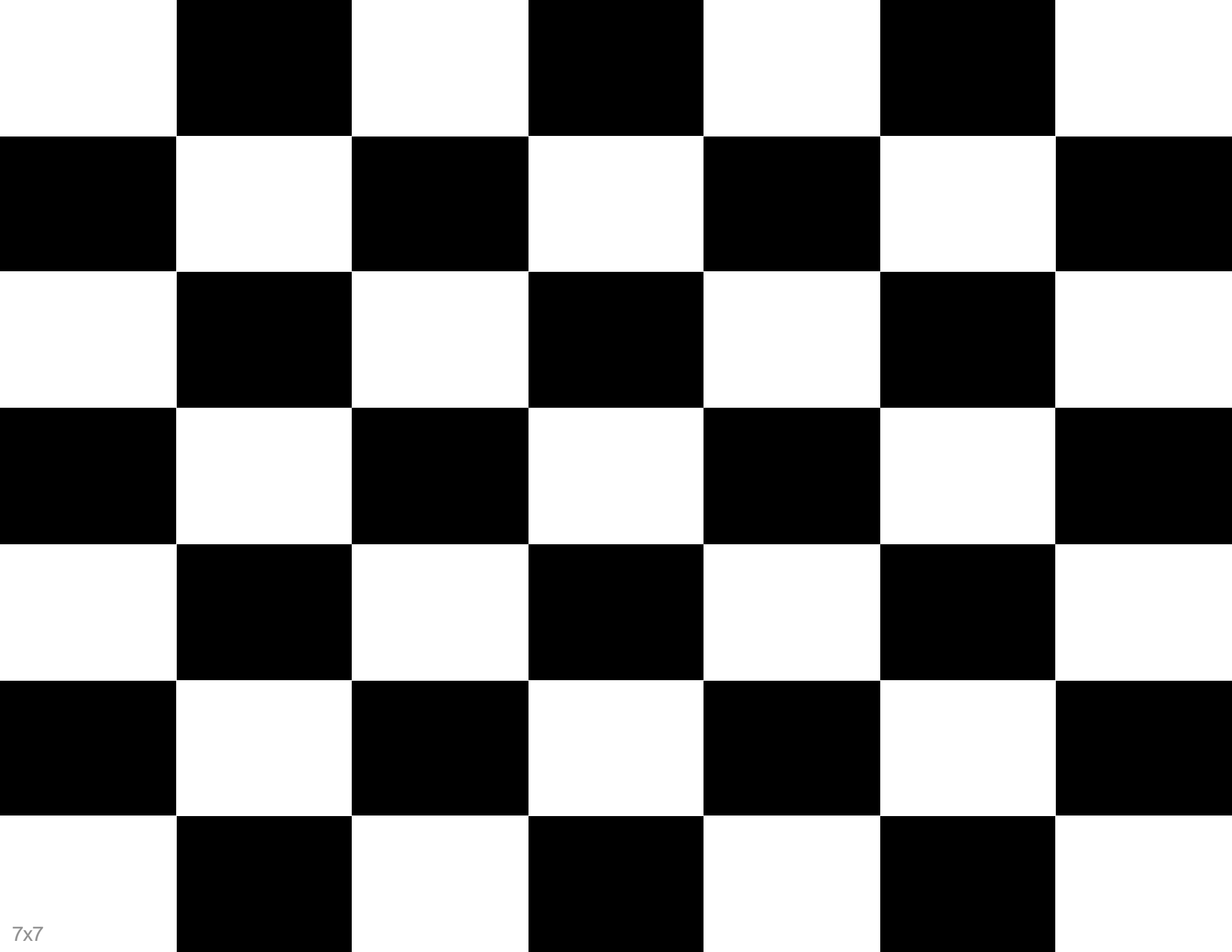


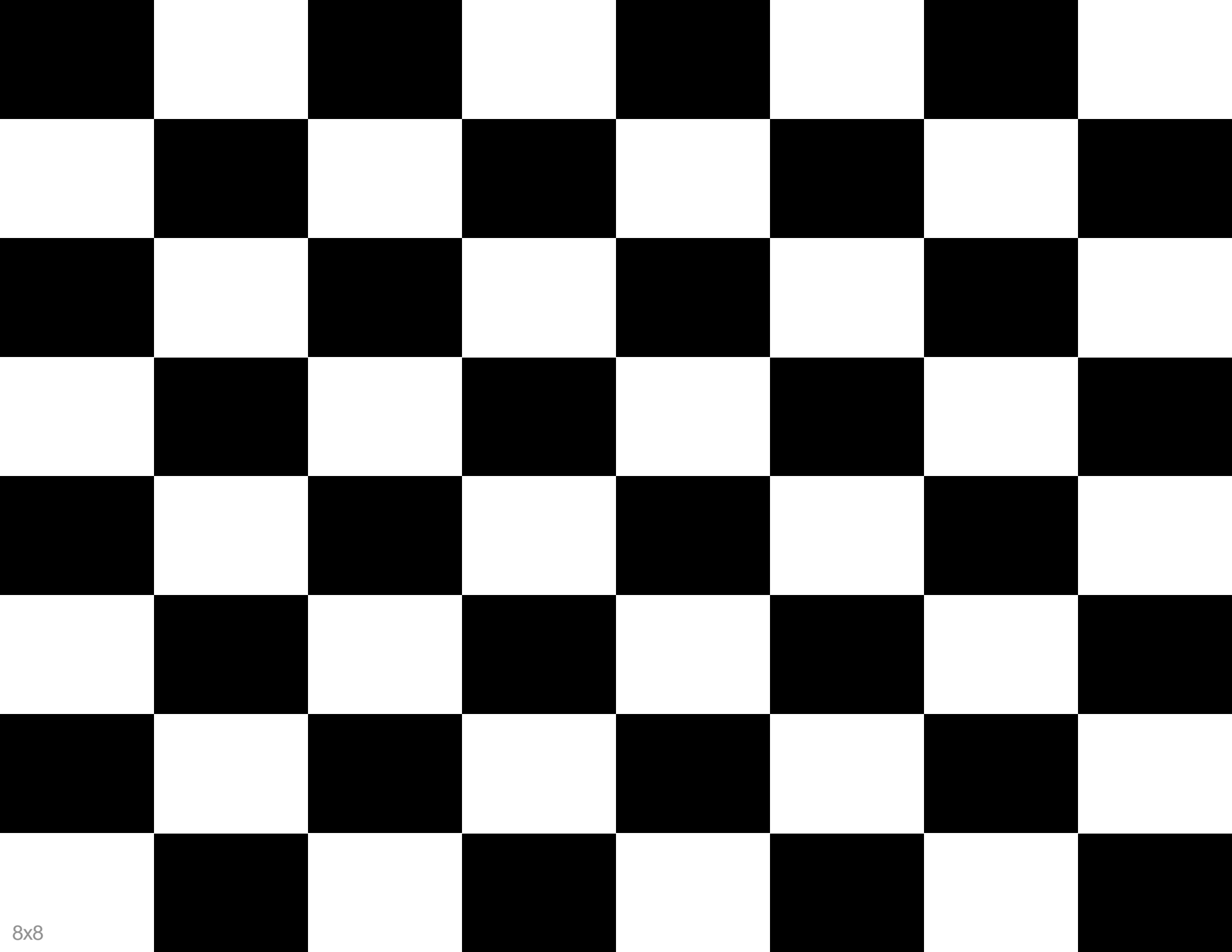
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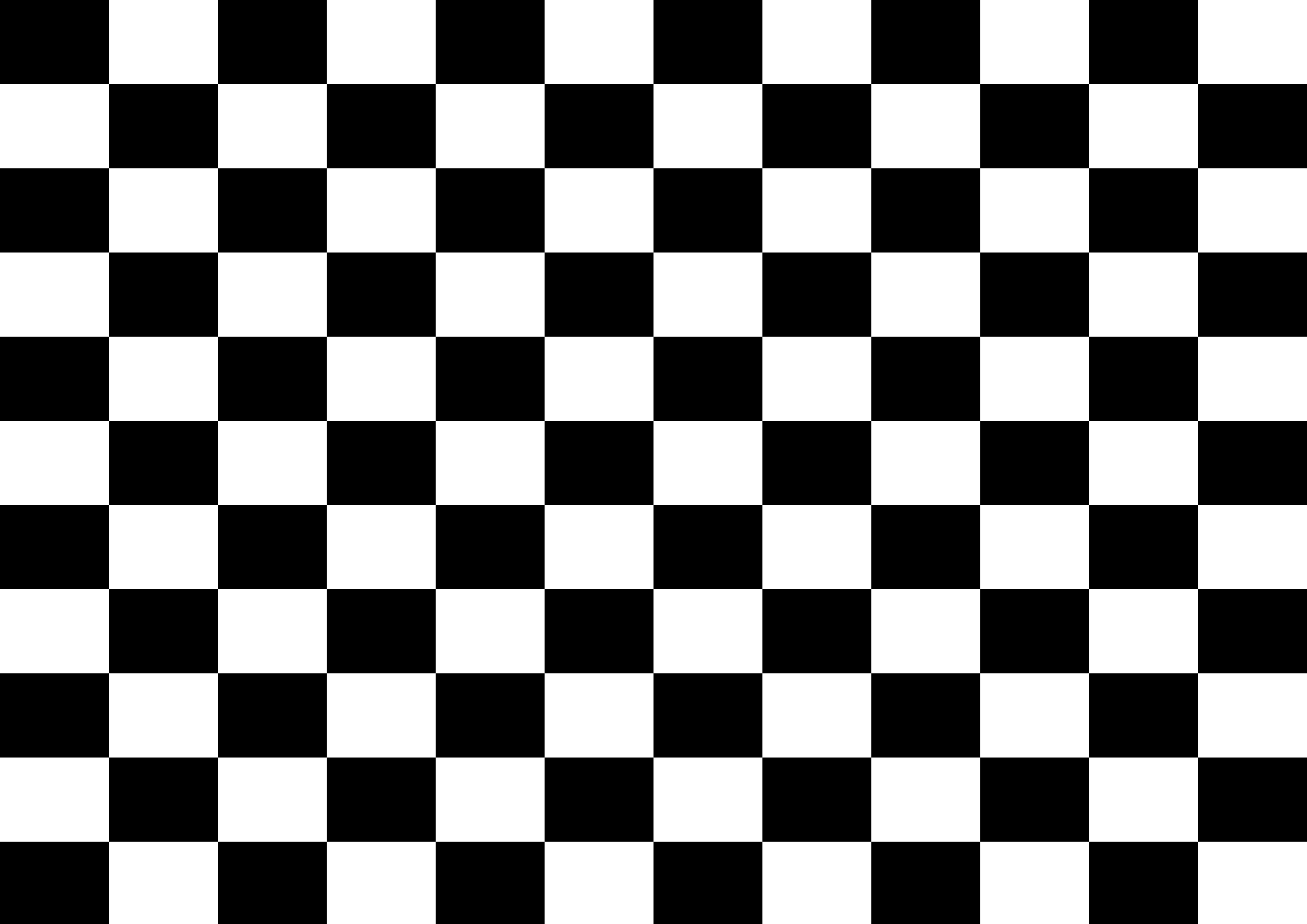


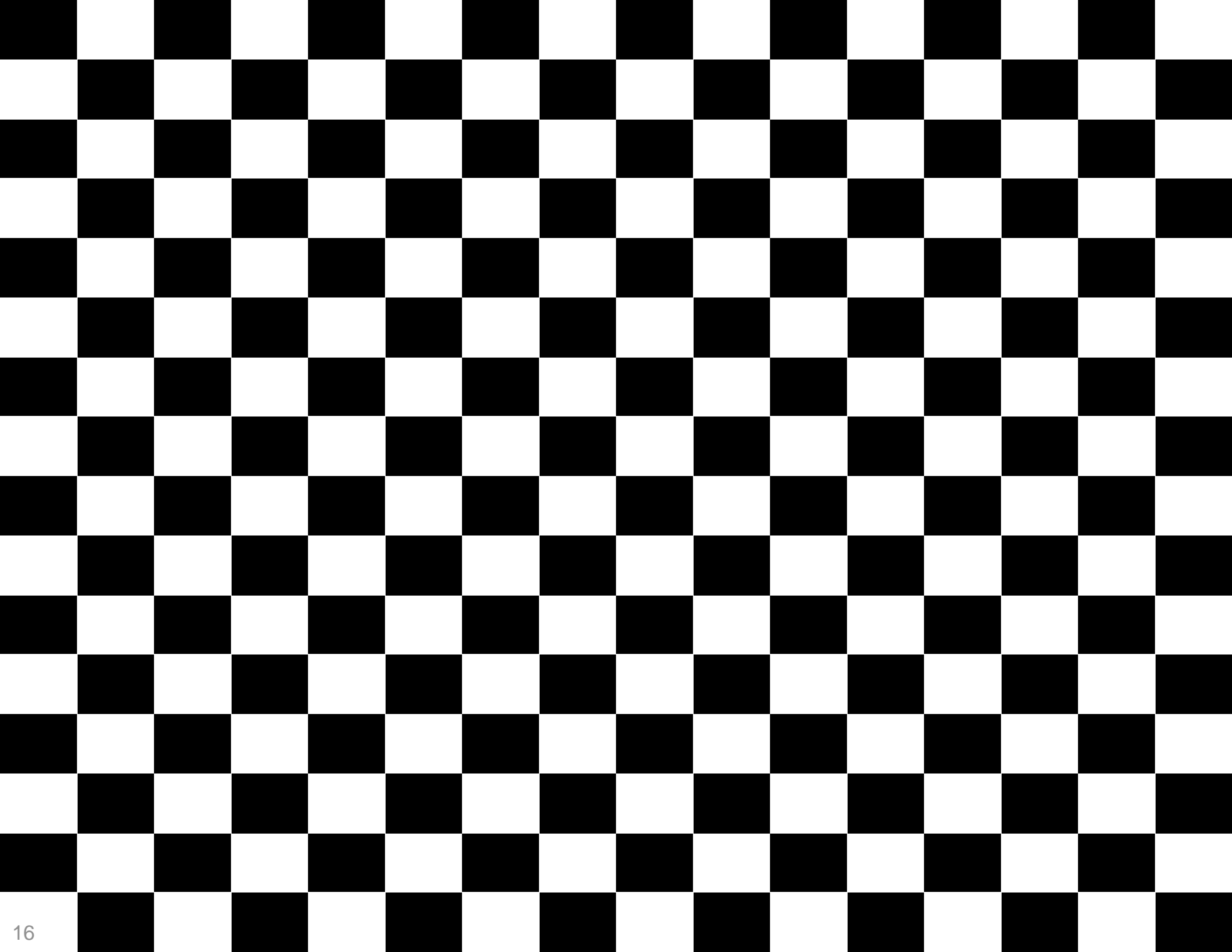


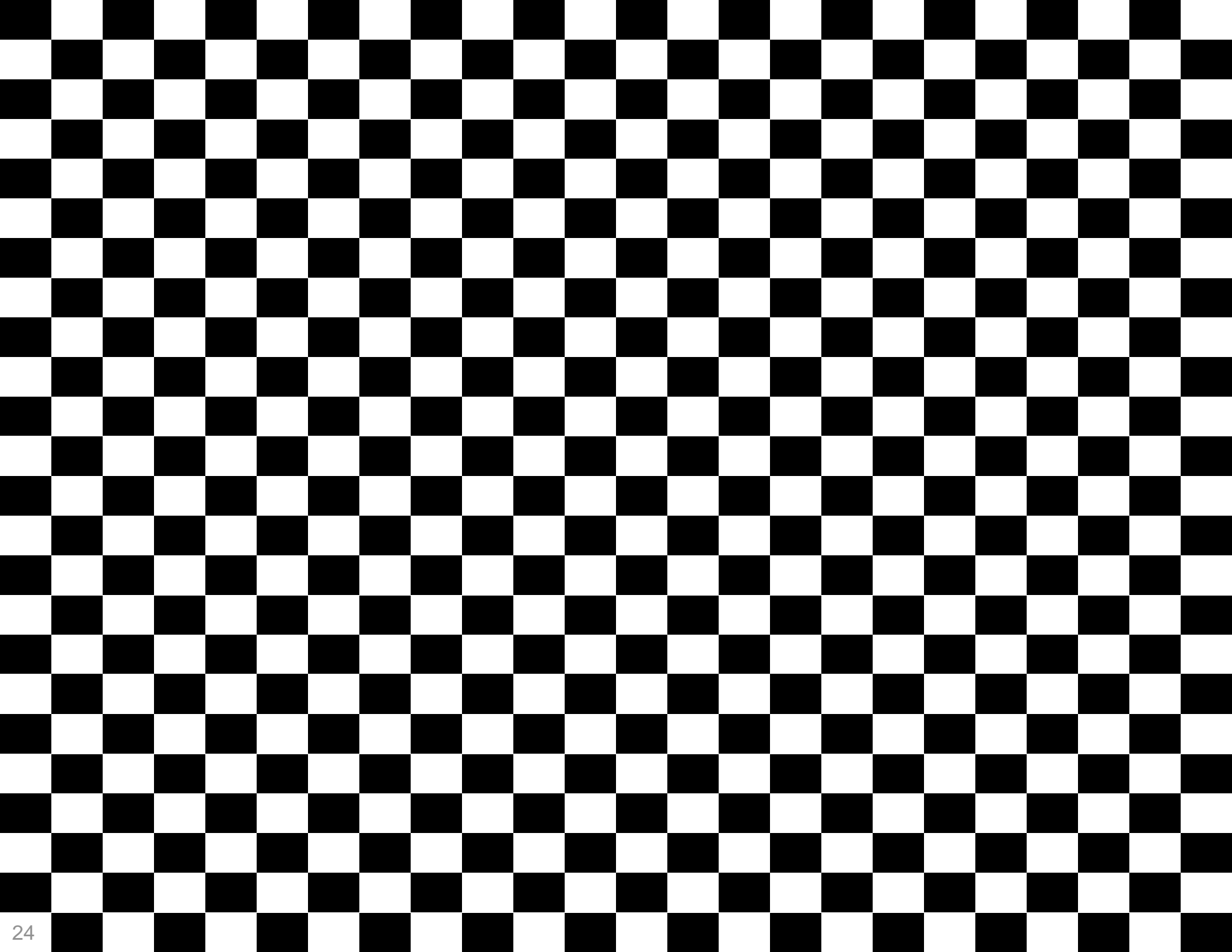


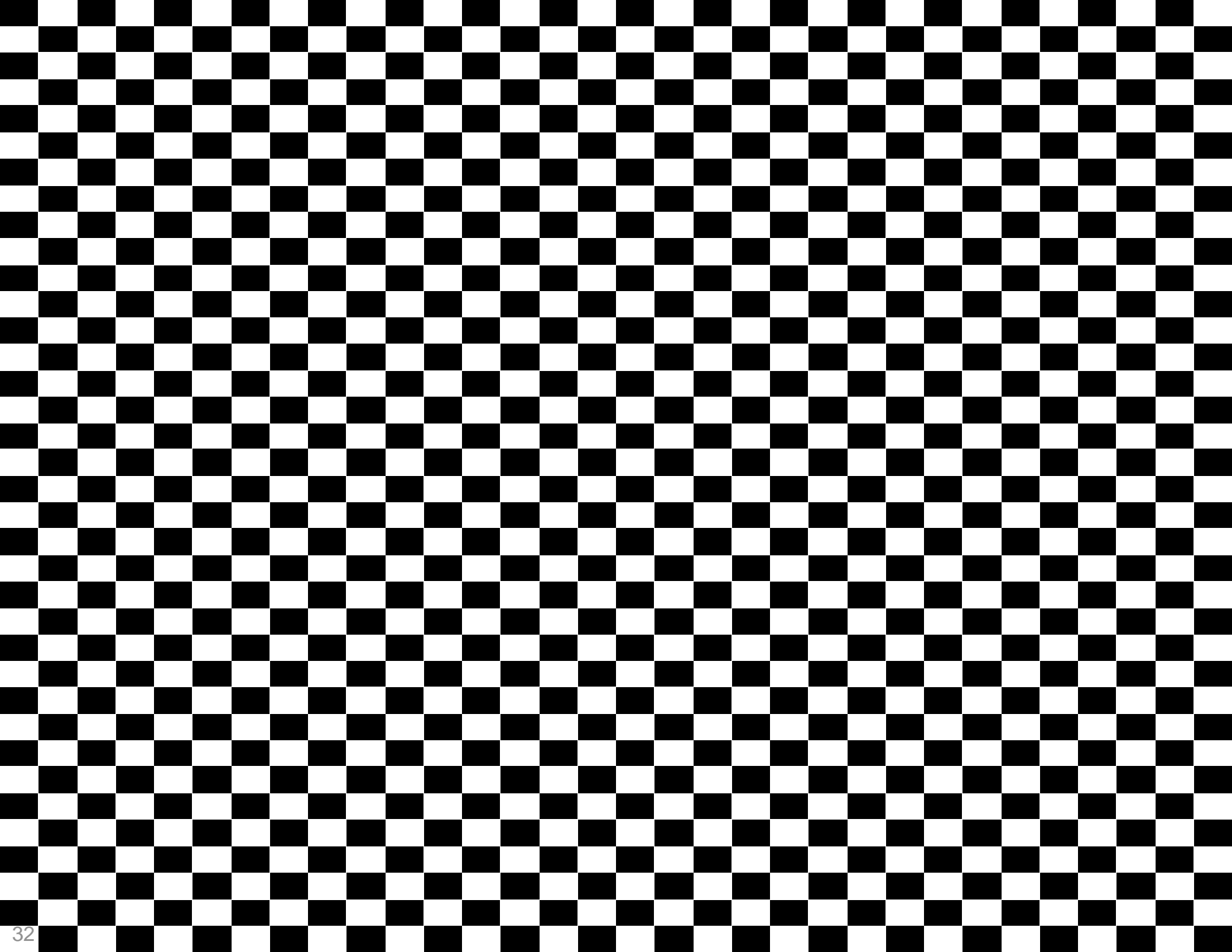


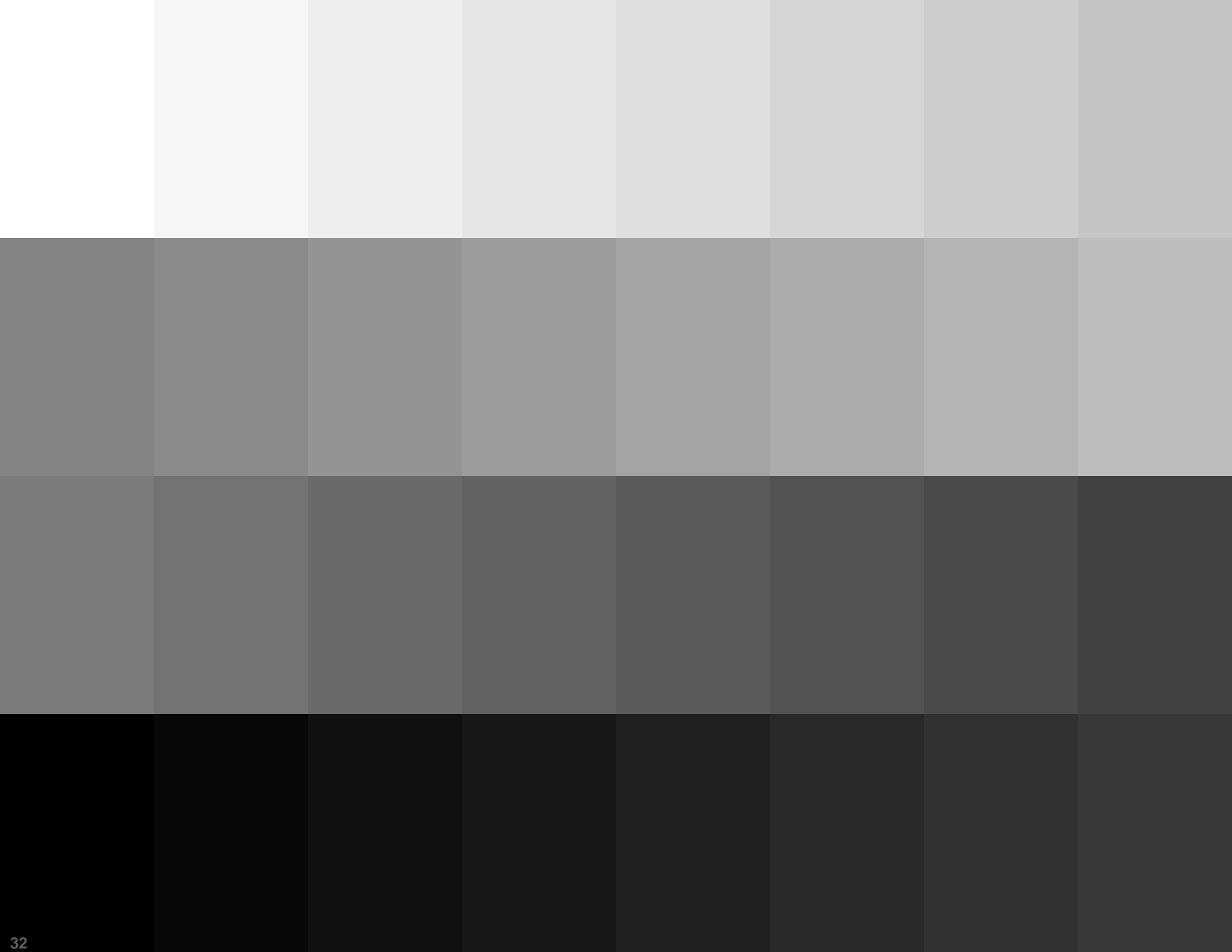


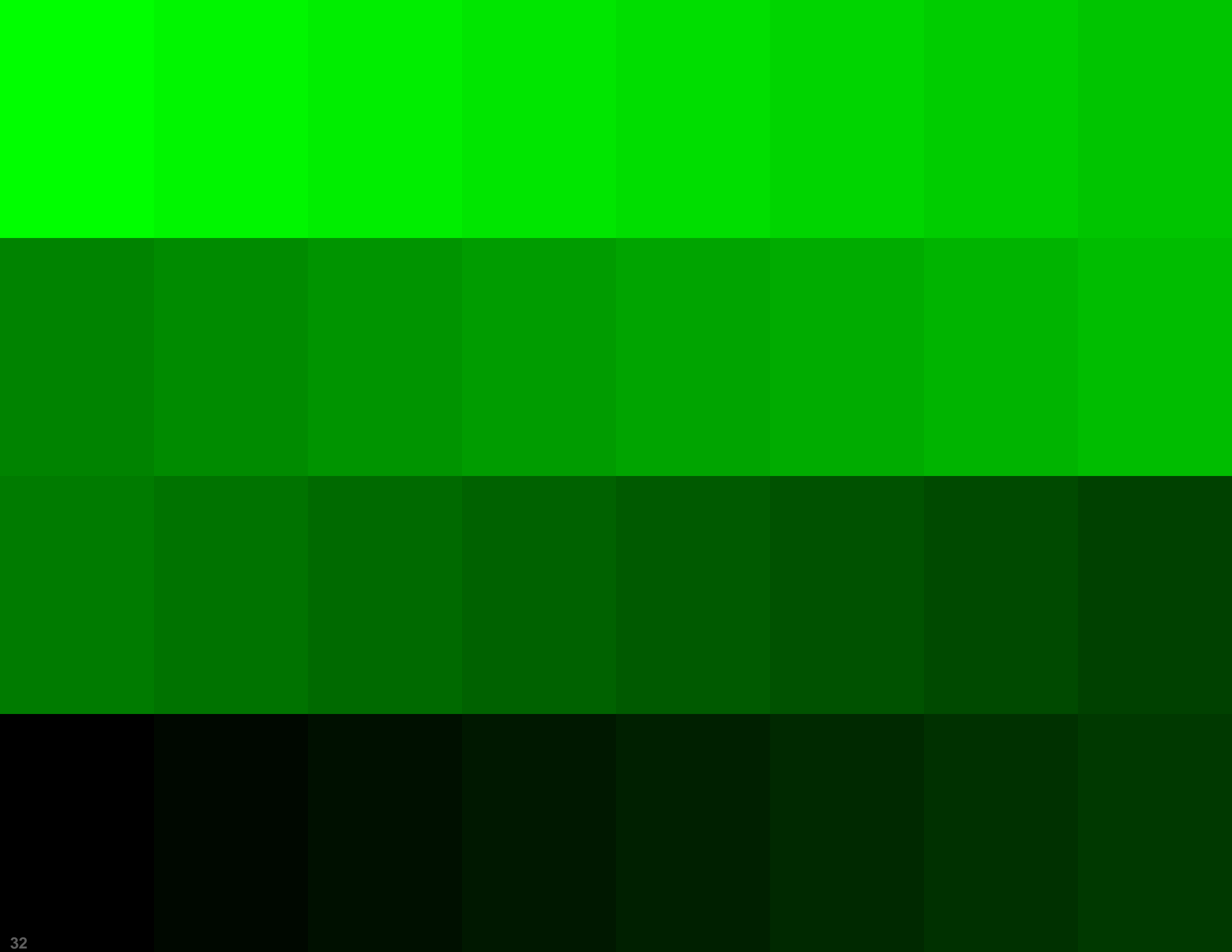






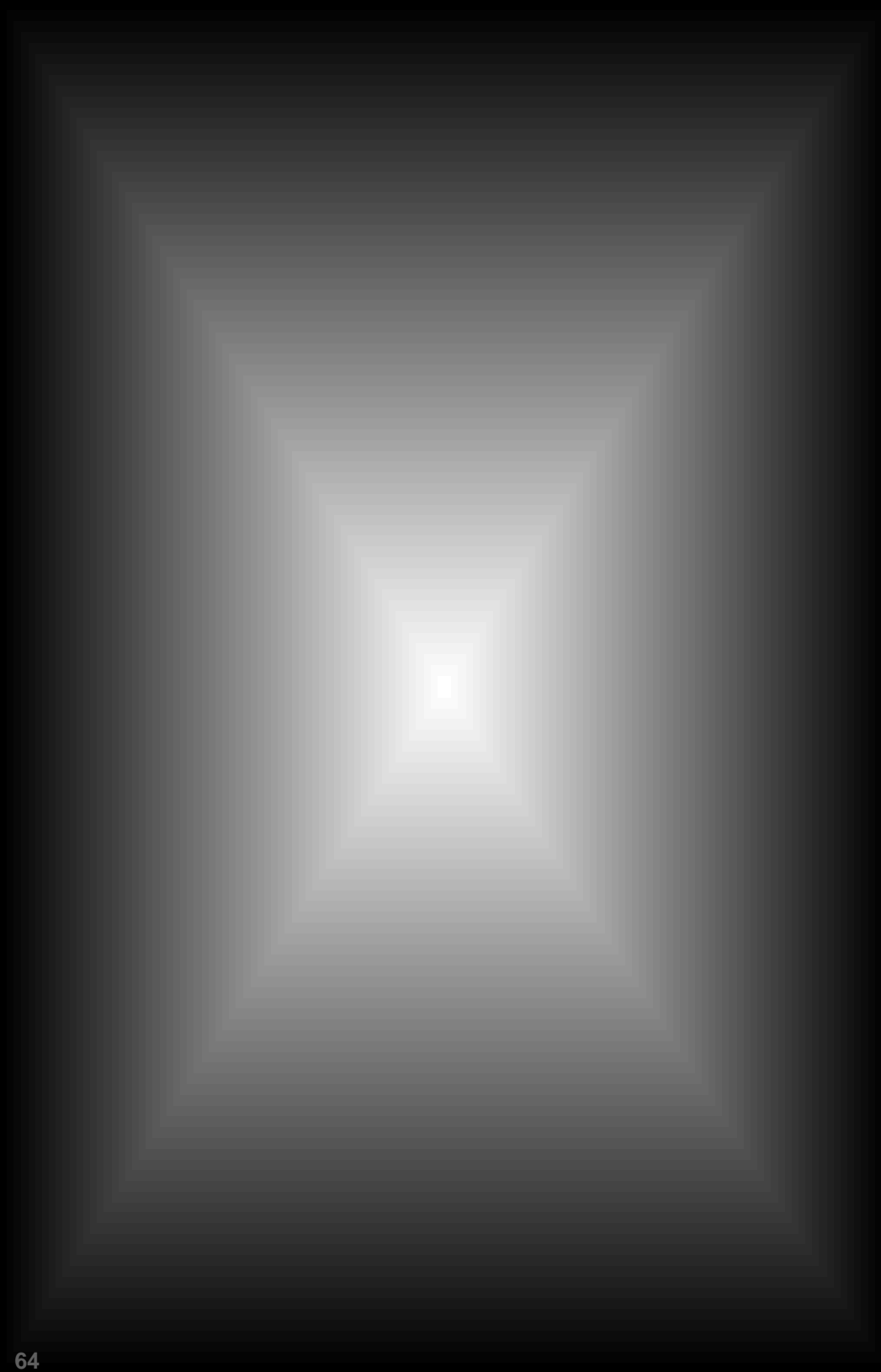
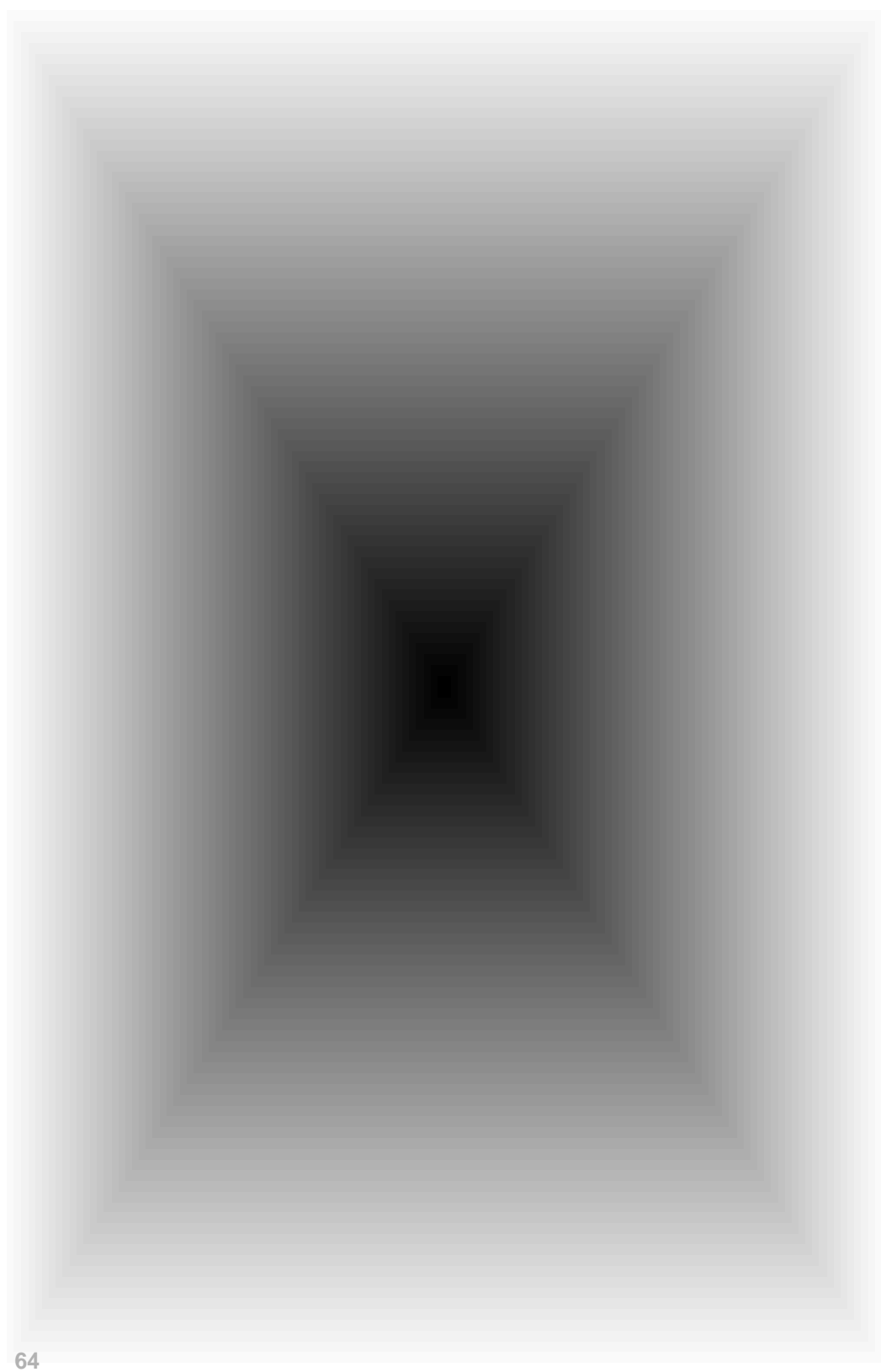


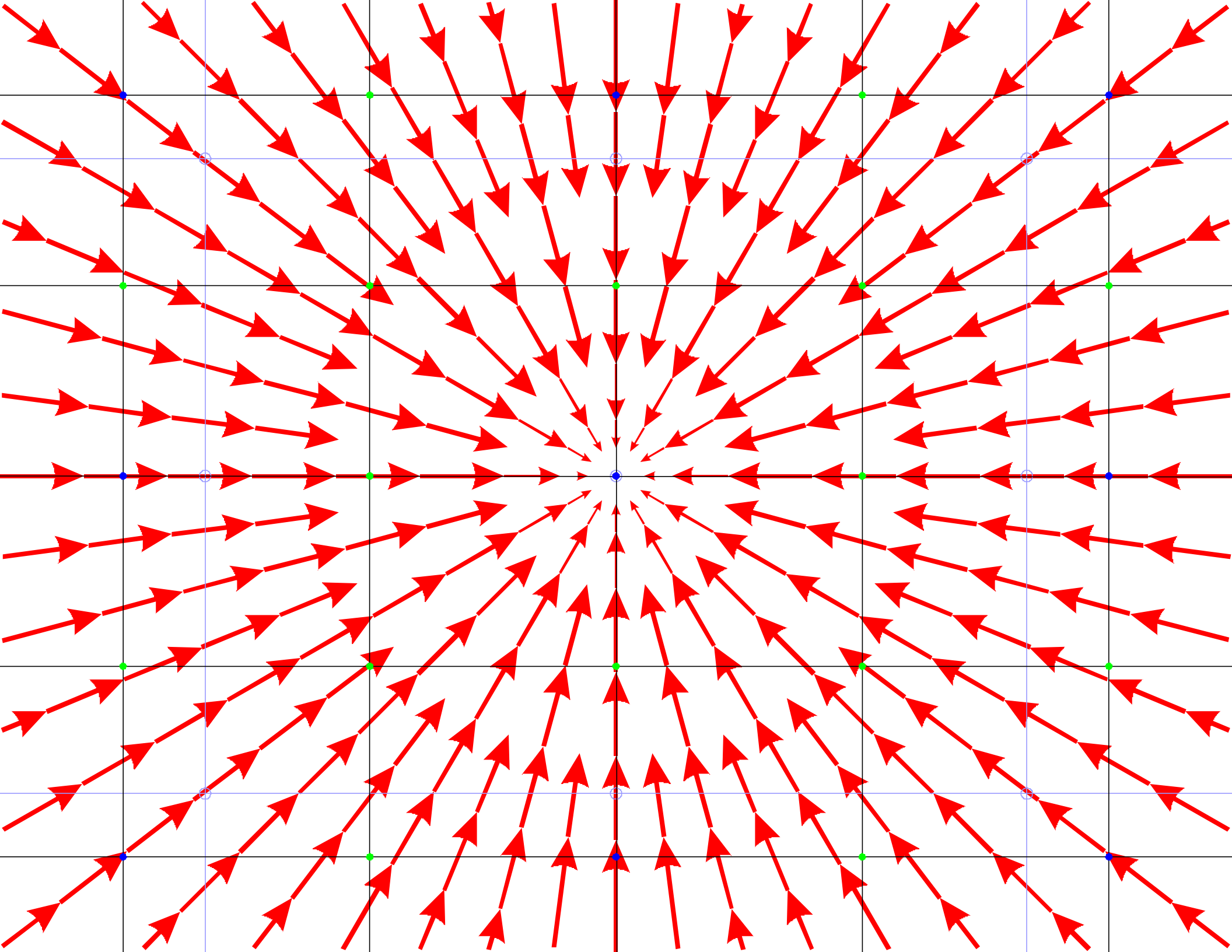


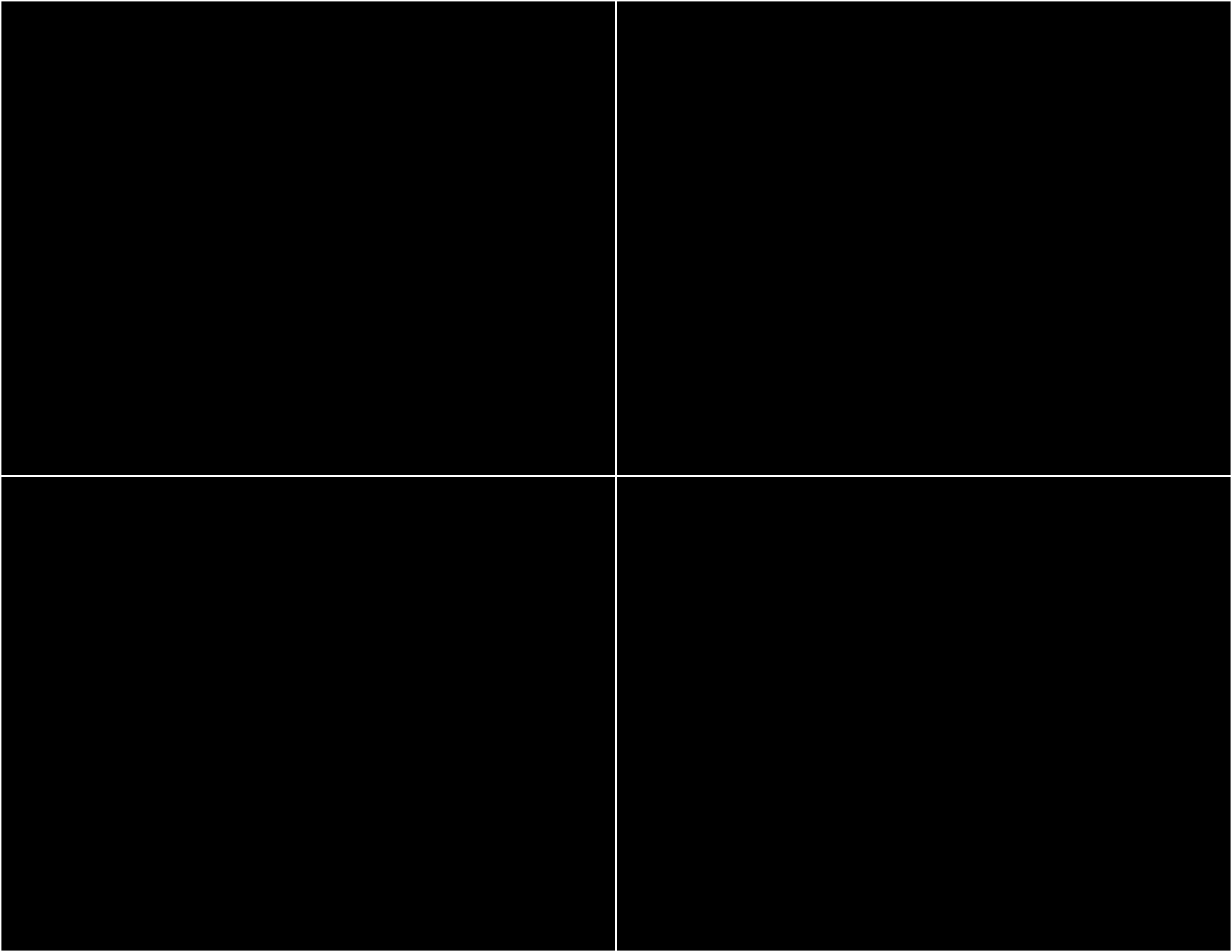


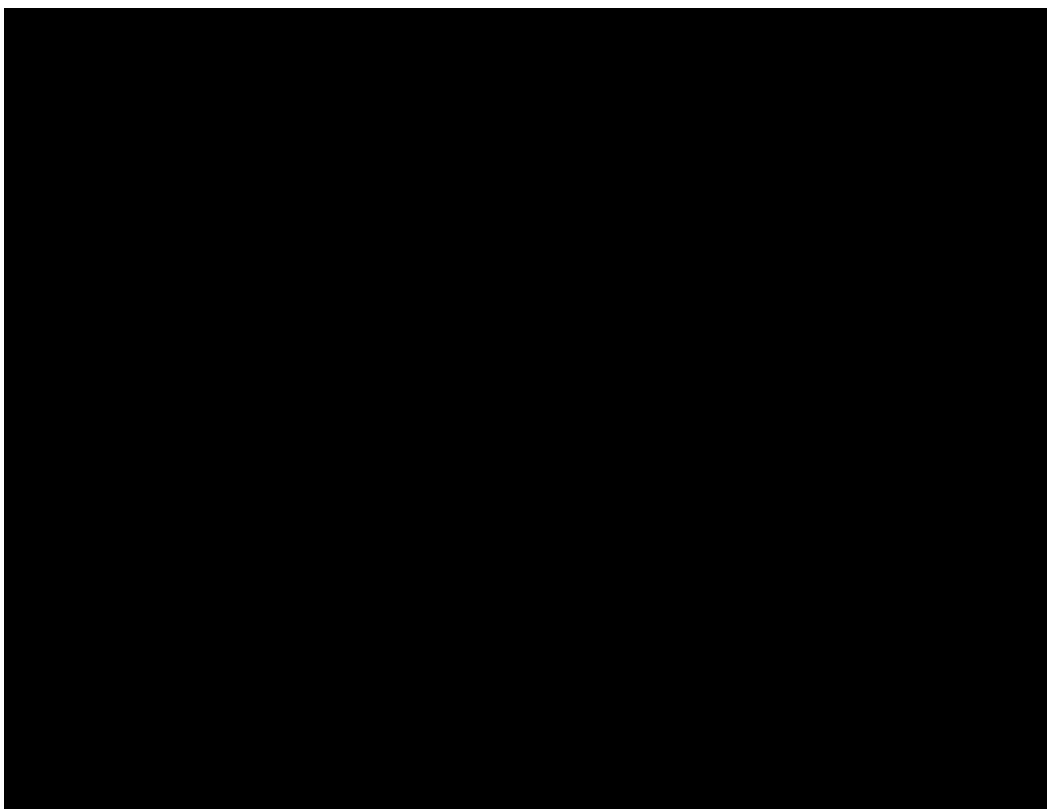
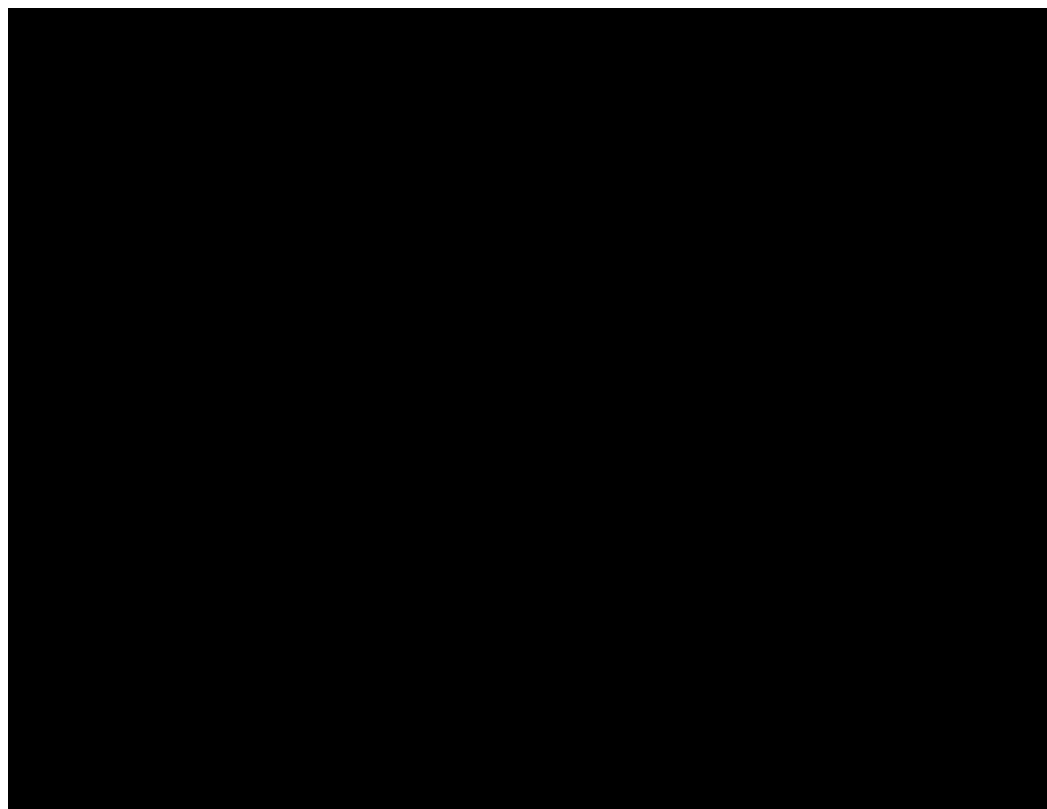


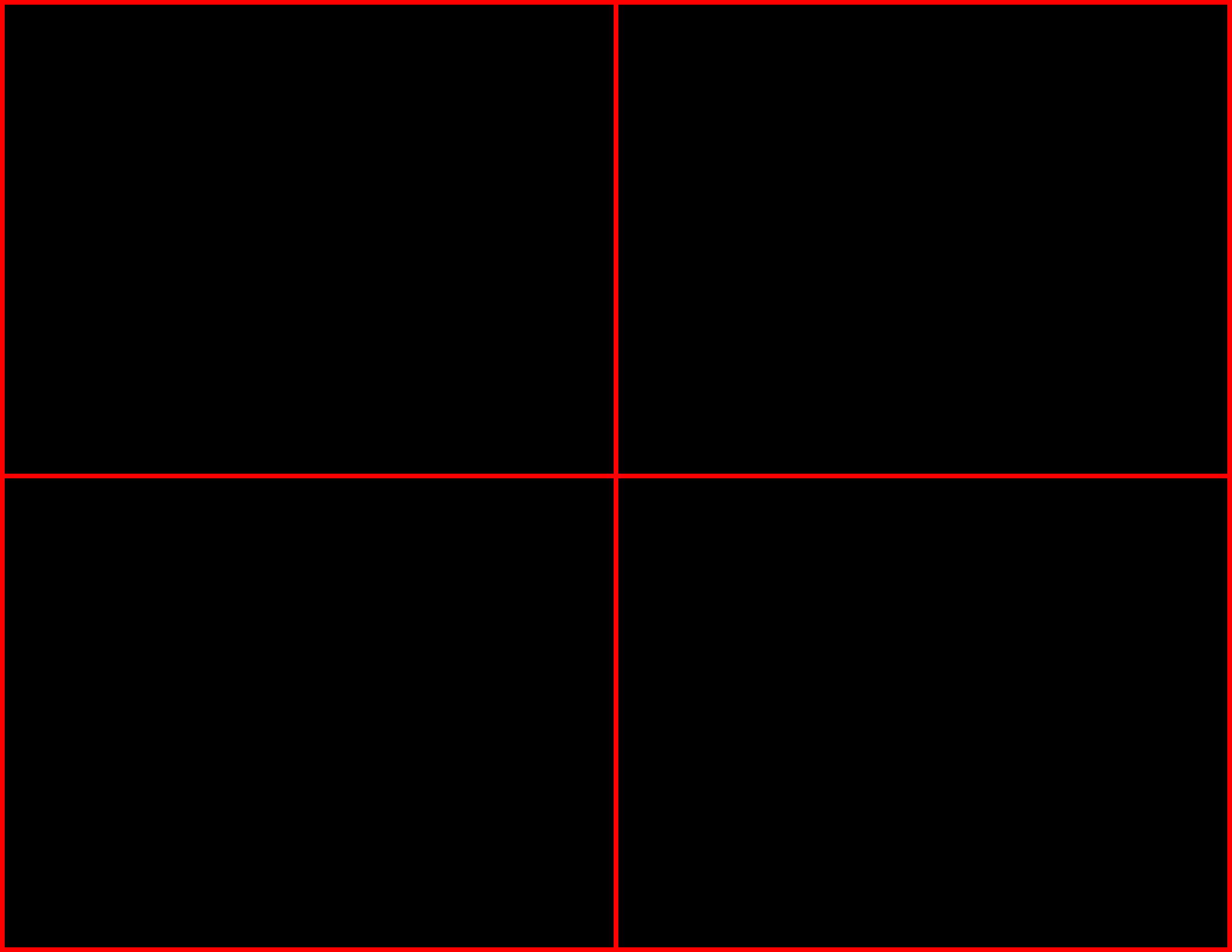


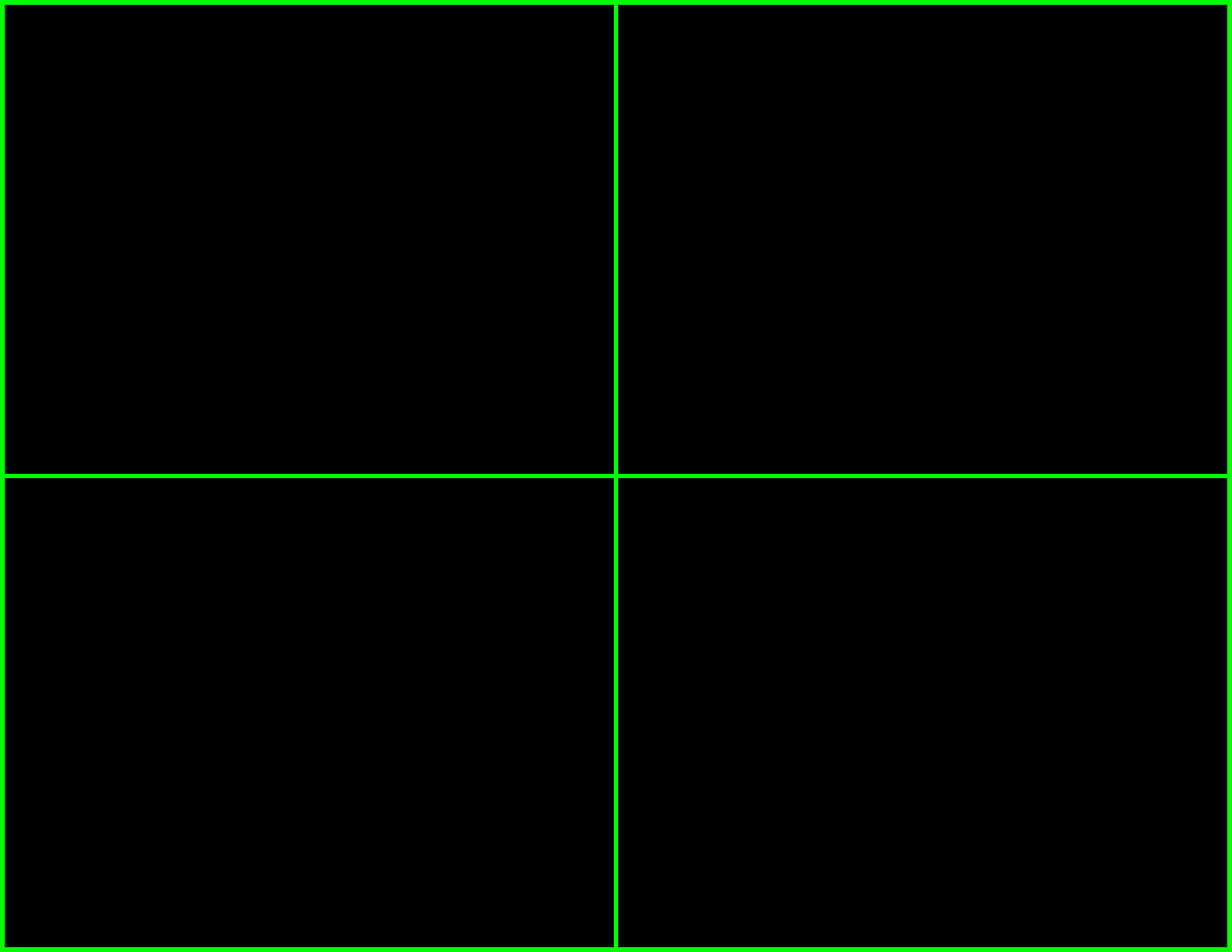


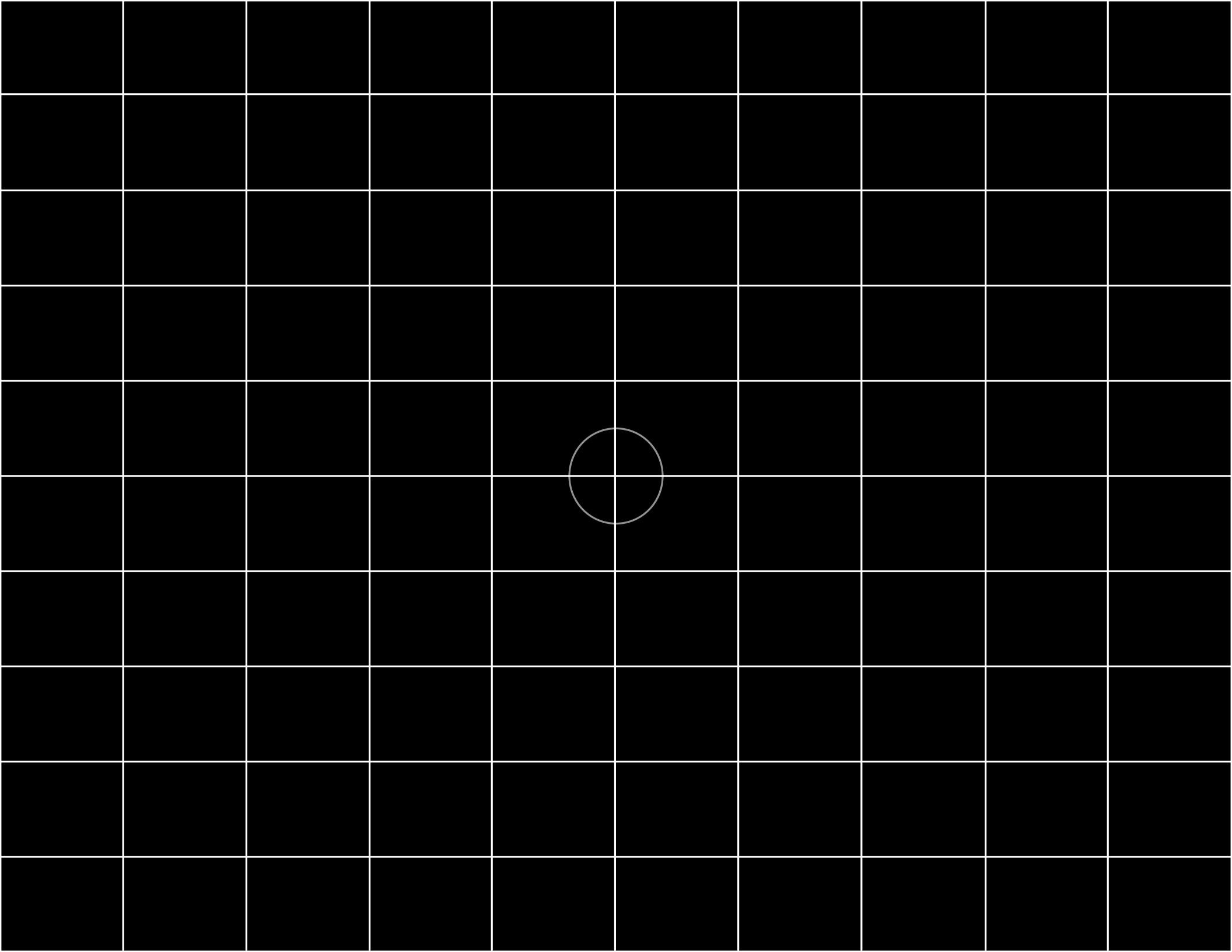


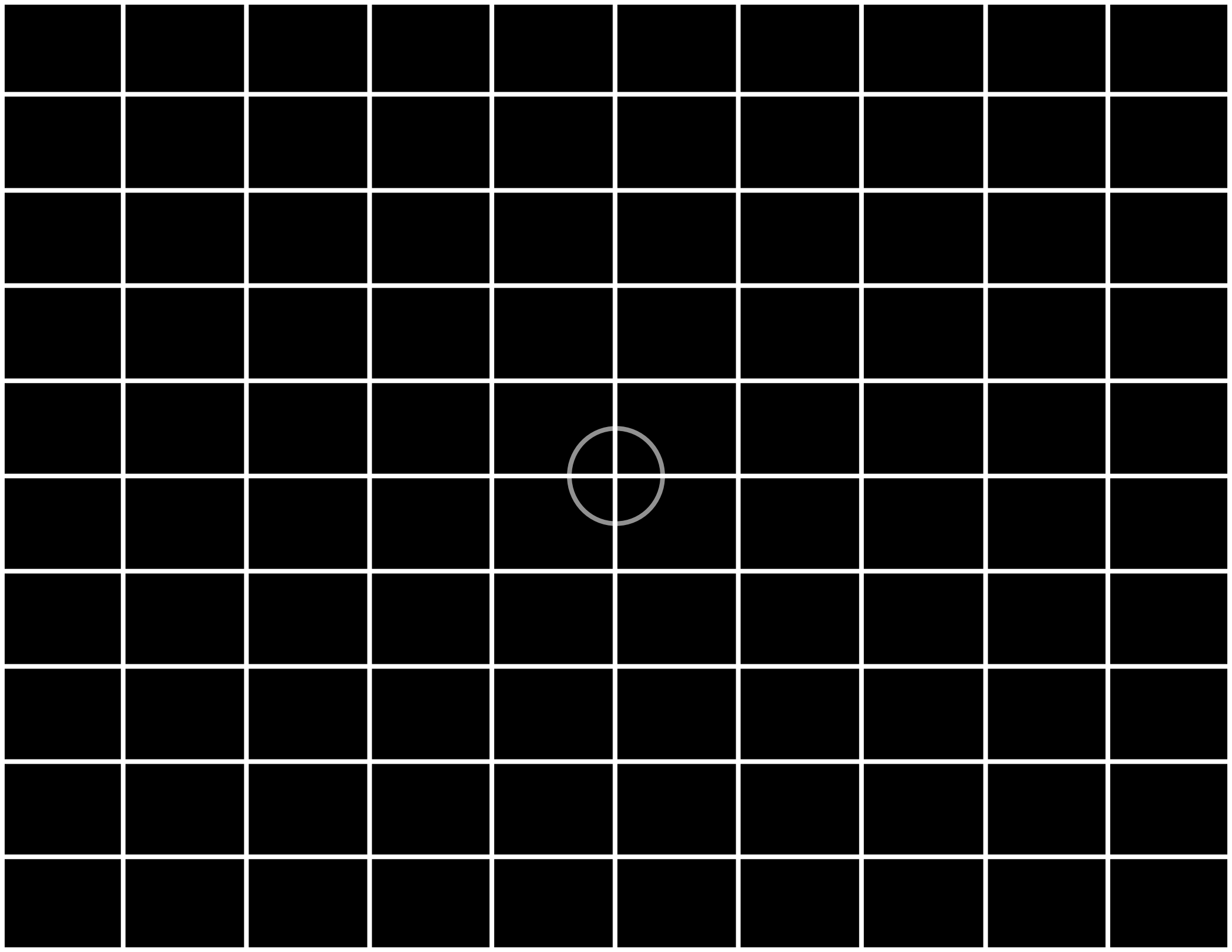


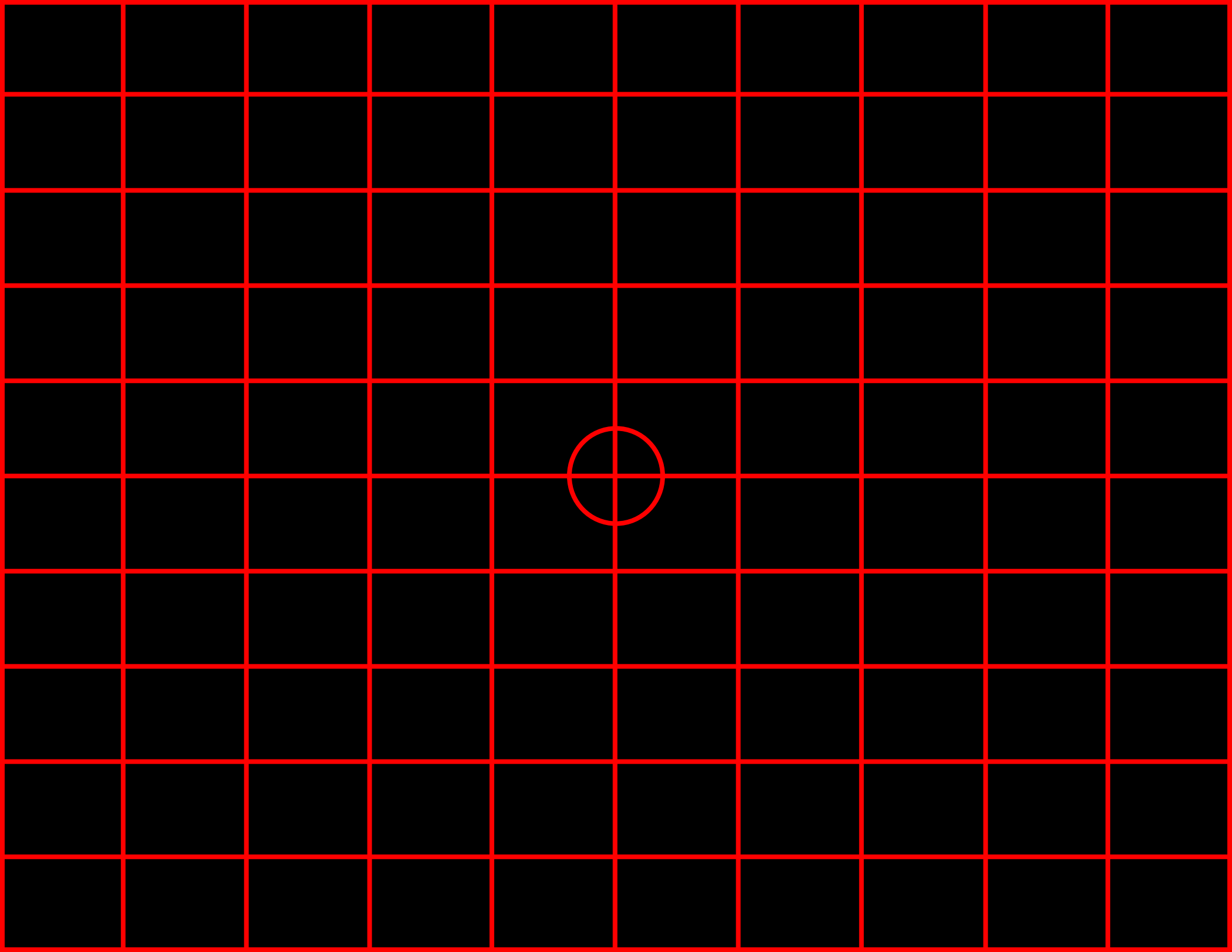


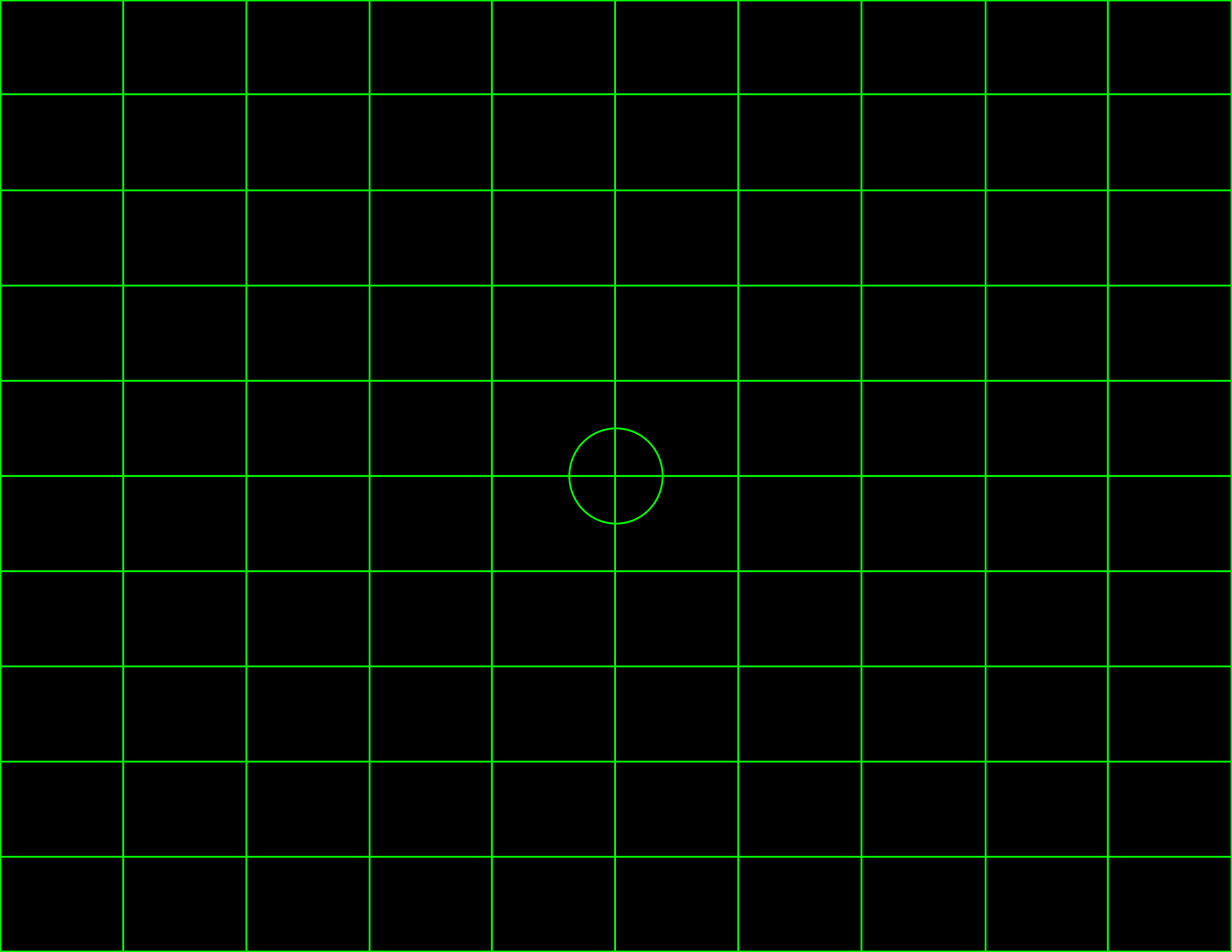


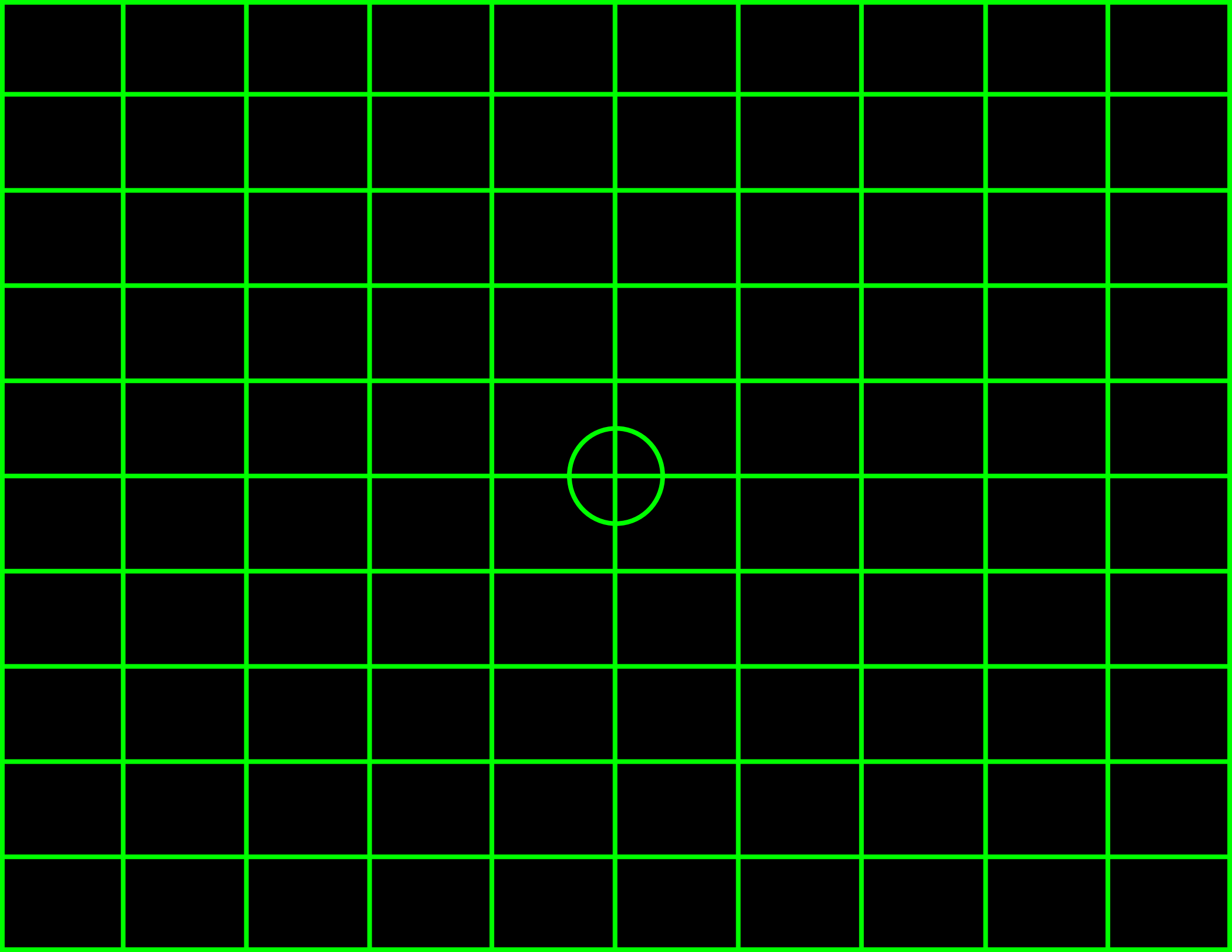


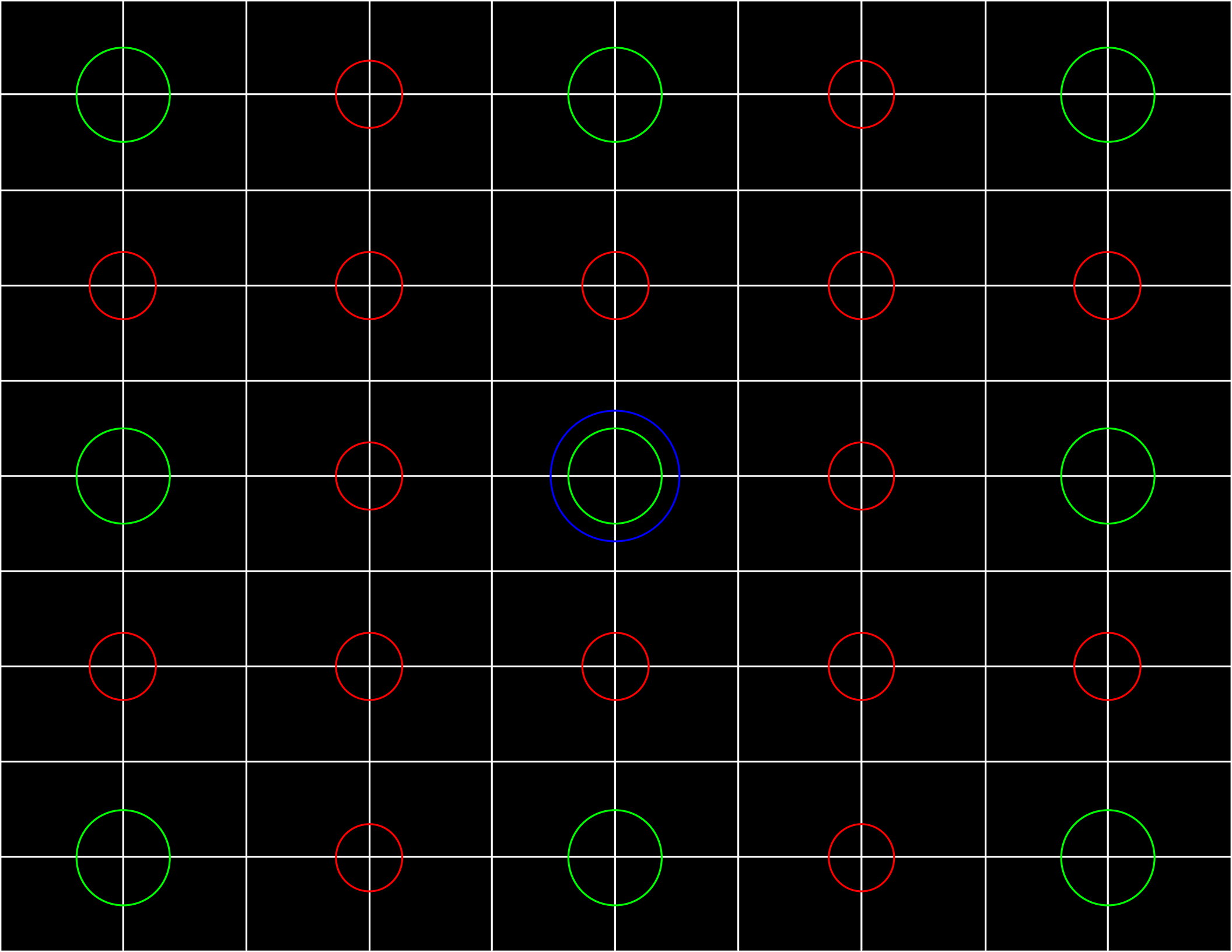


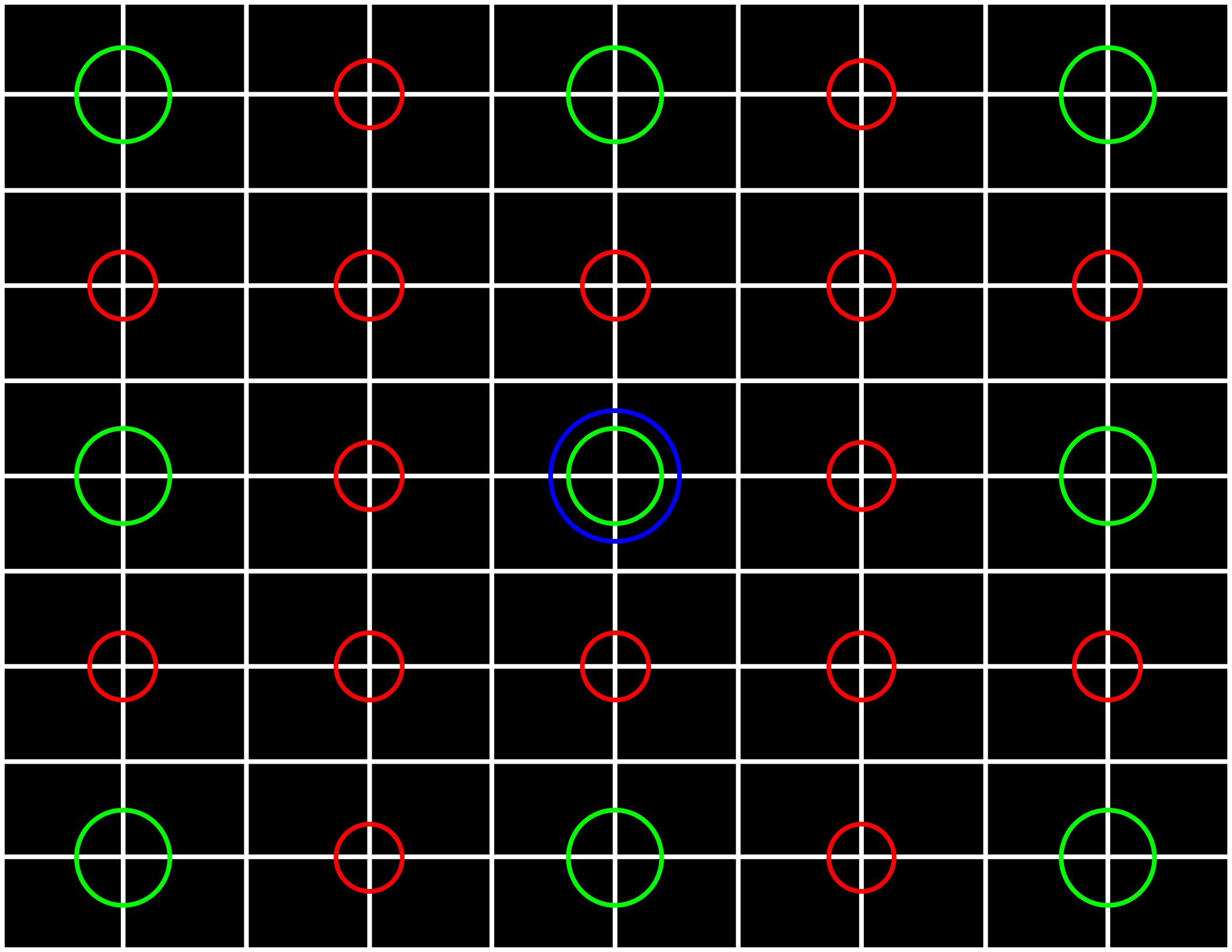


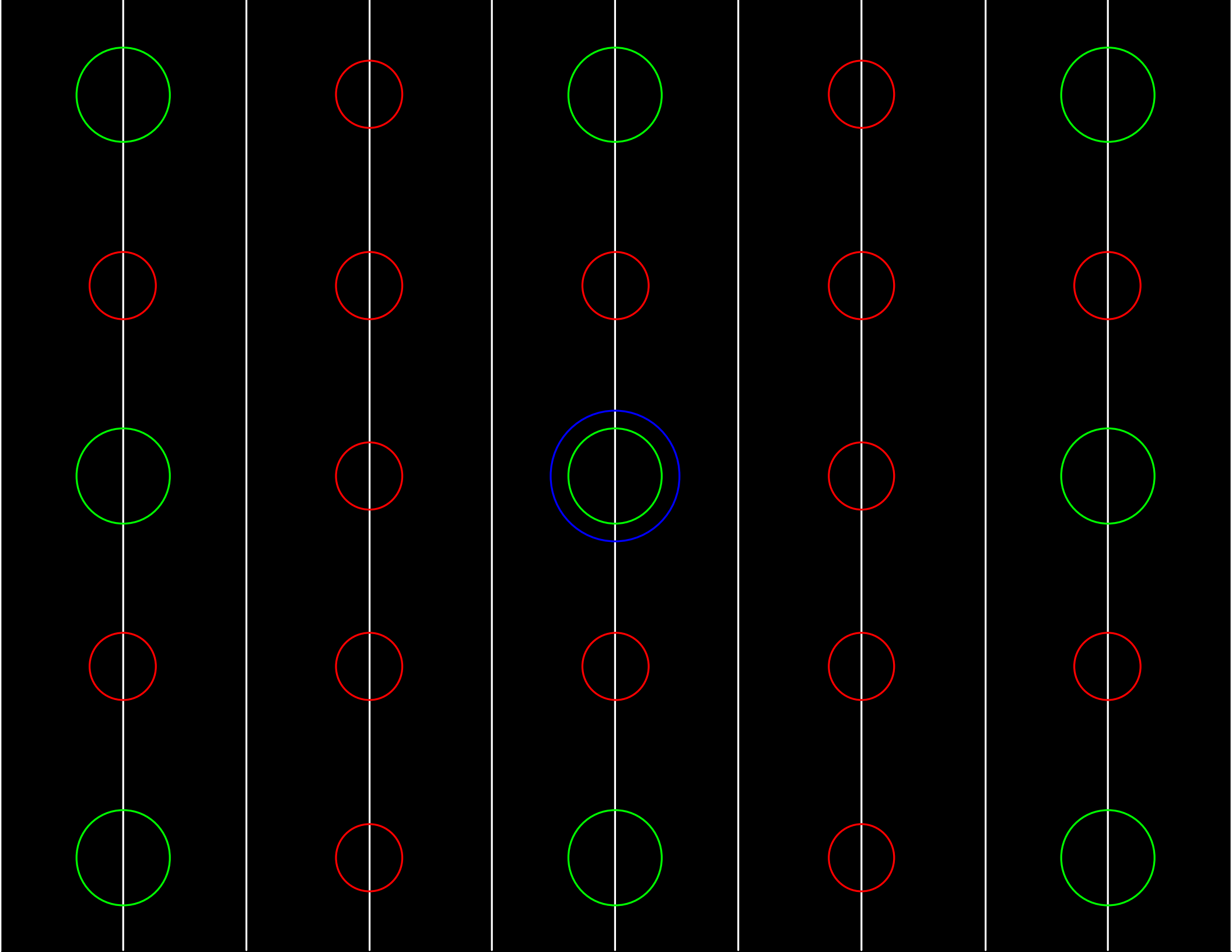


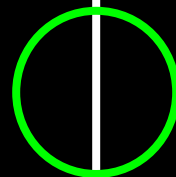
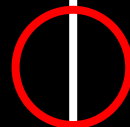
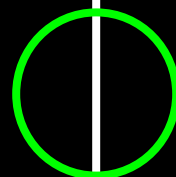
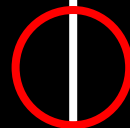
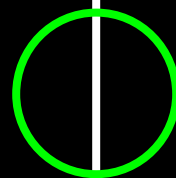
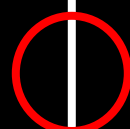
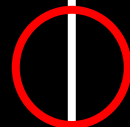
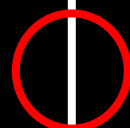
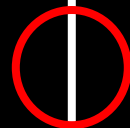
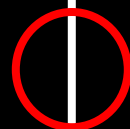
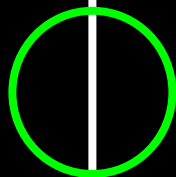
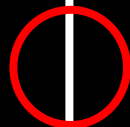
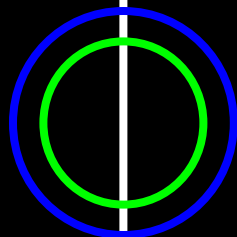
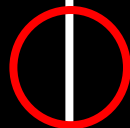
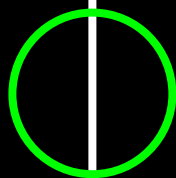
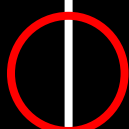
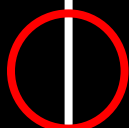
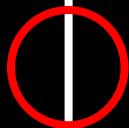
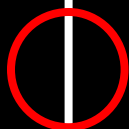
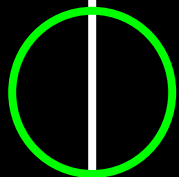
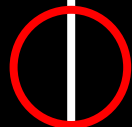
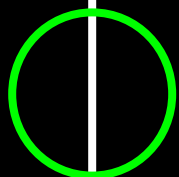
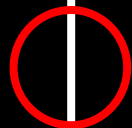
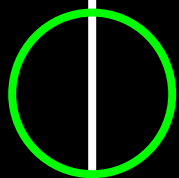


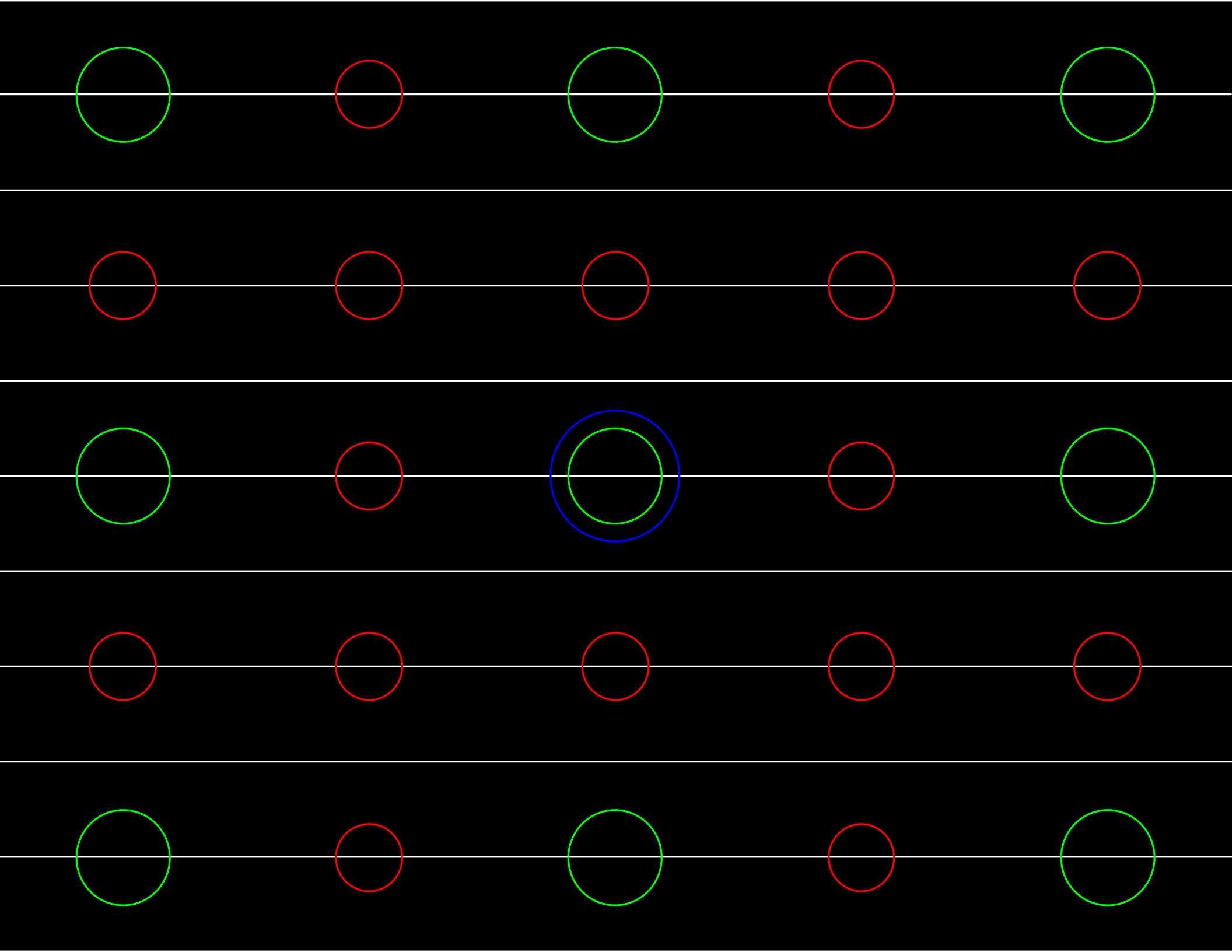


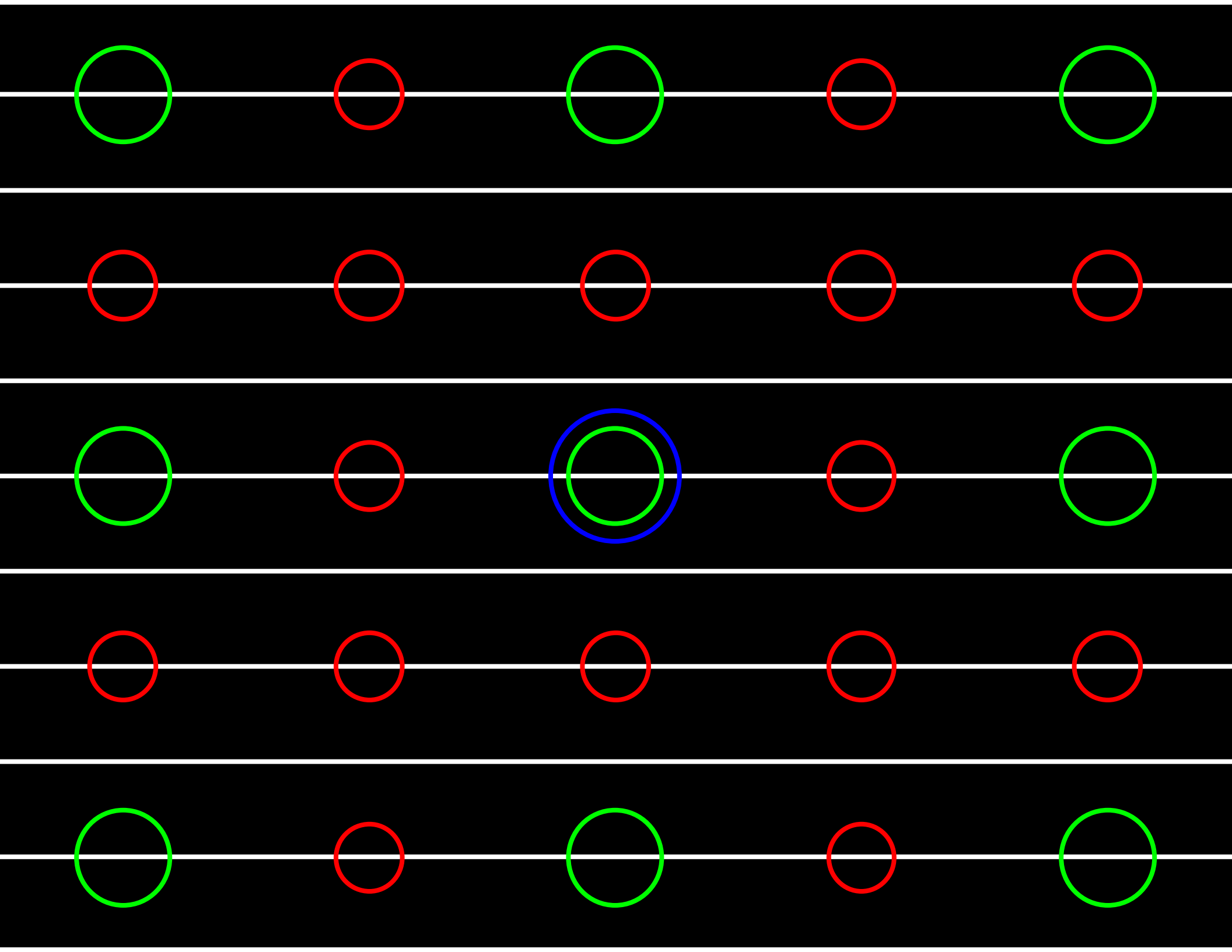




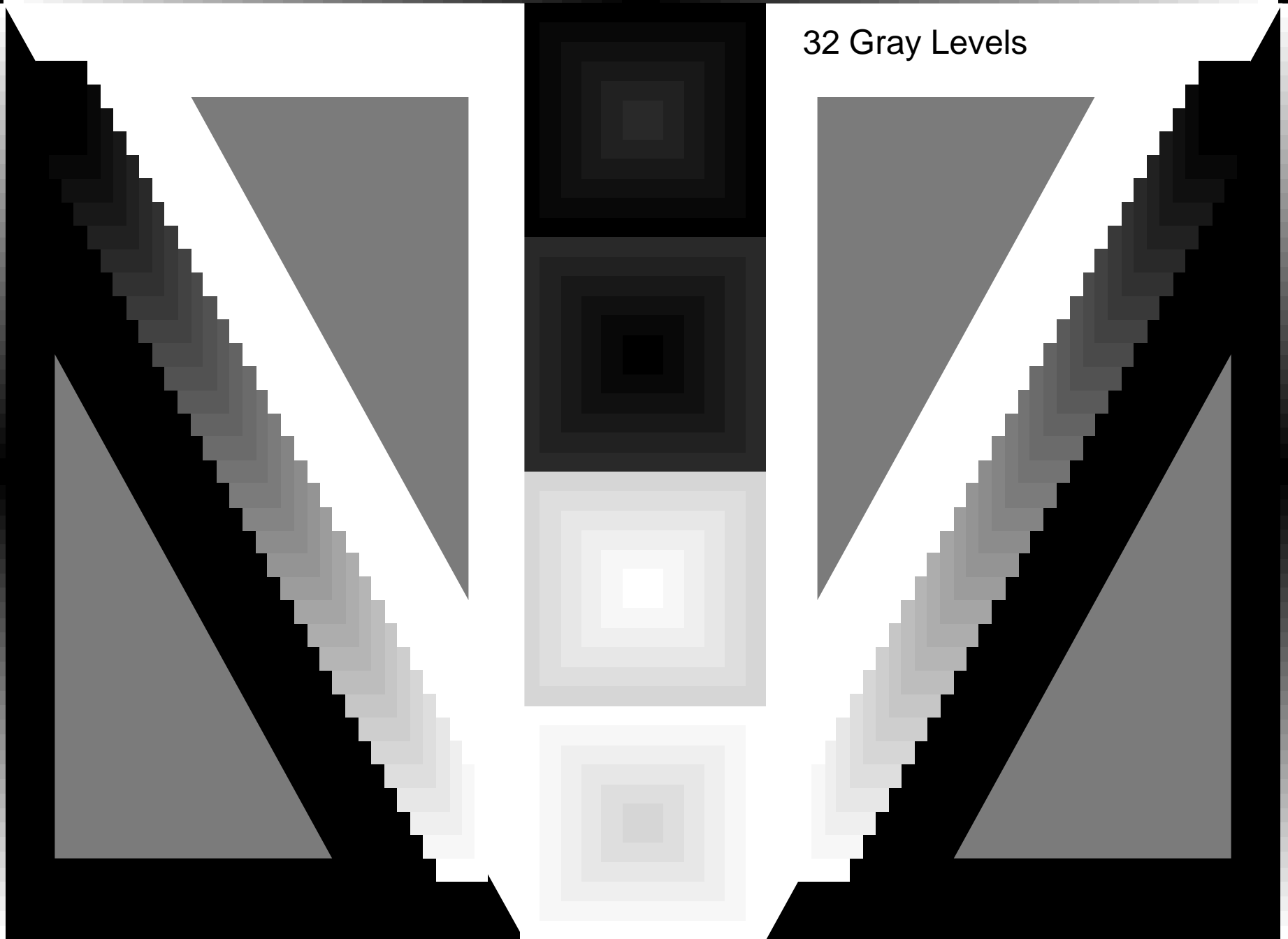


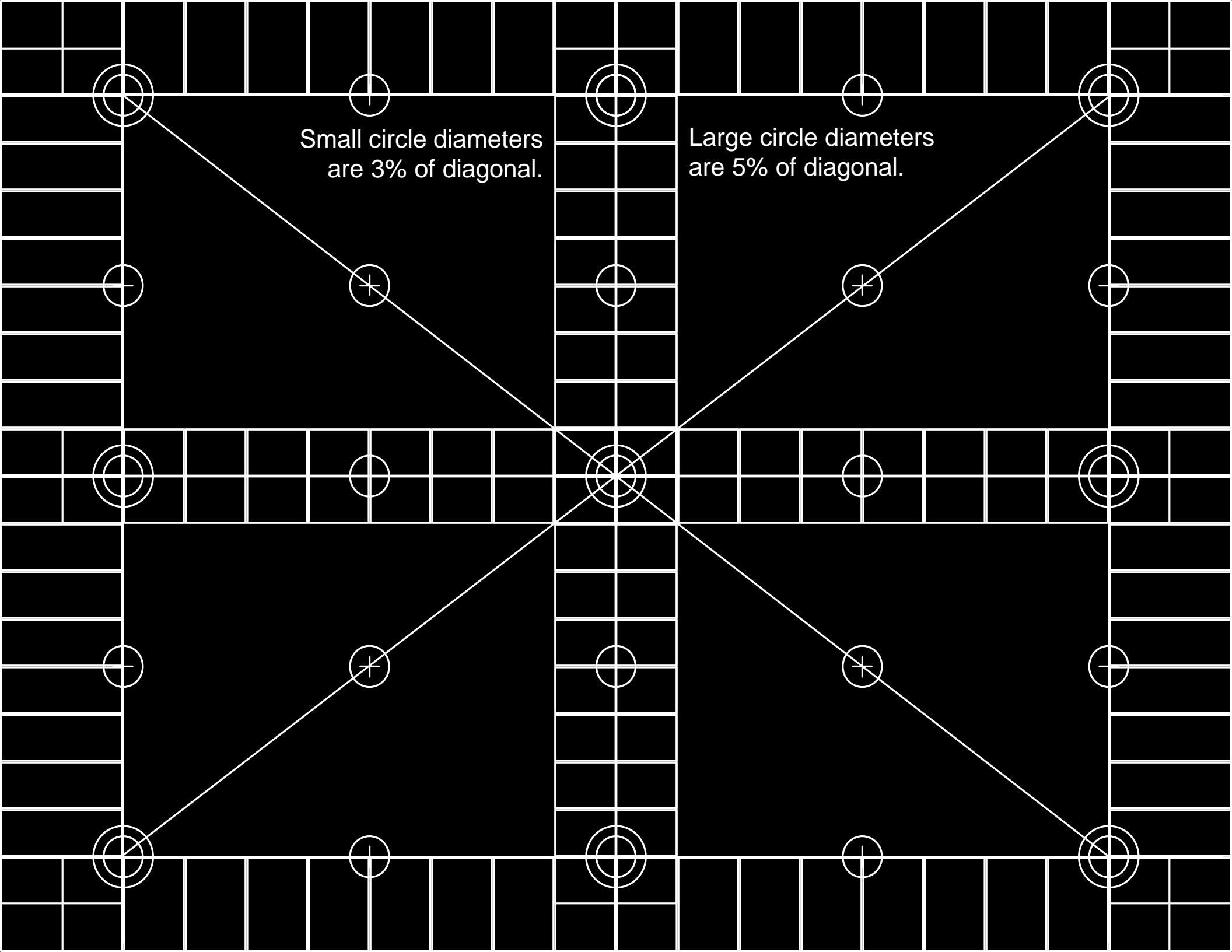






32 Gray Levels





Small circle diameters
are 3% of diagonal.

Large circle diameters
are 5% of diagonal.